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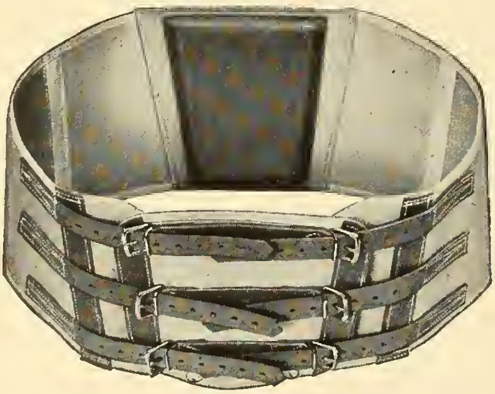

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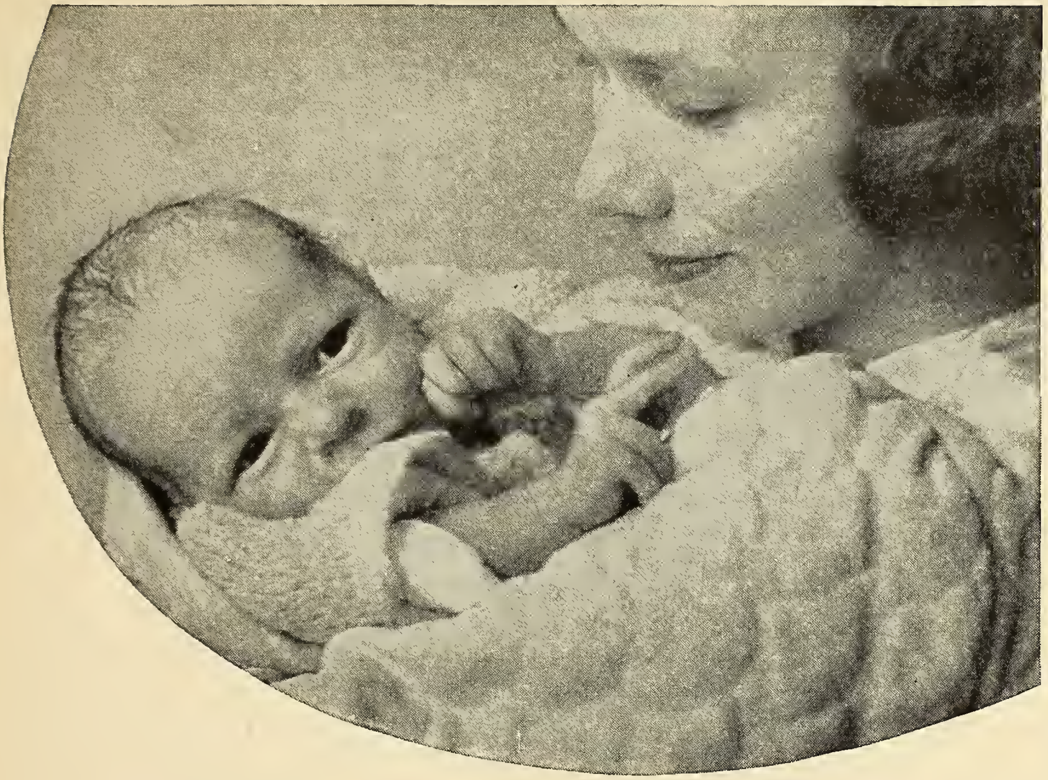

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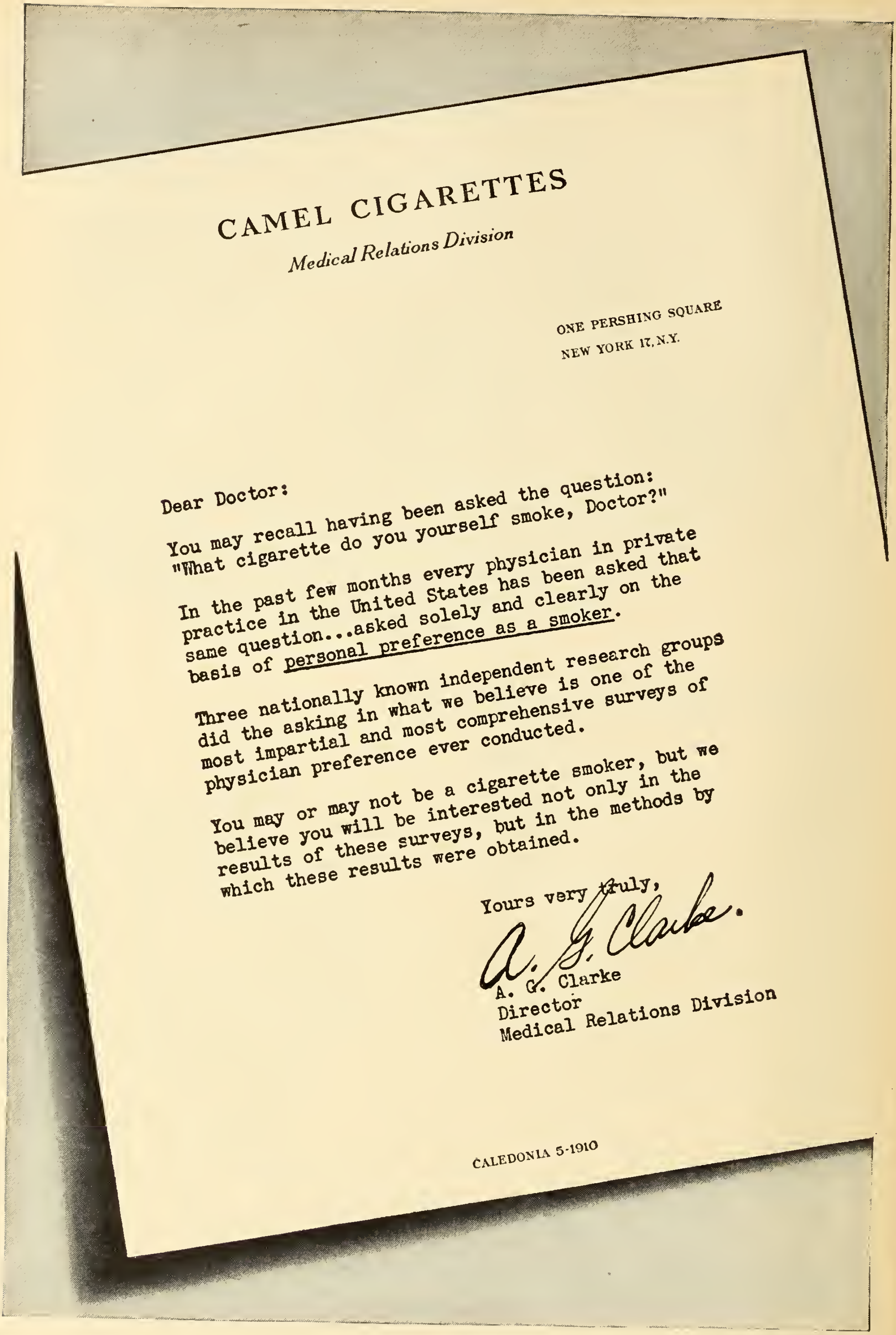

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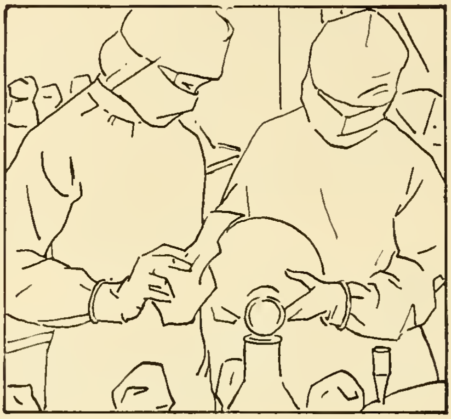

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Spoke then the Wise One: "My son, the Priceless Ingredient of every product in the marketplace is the Honor and Integrity of him who makes it. Consider his name before you buy."

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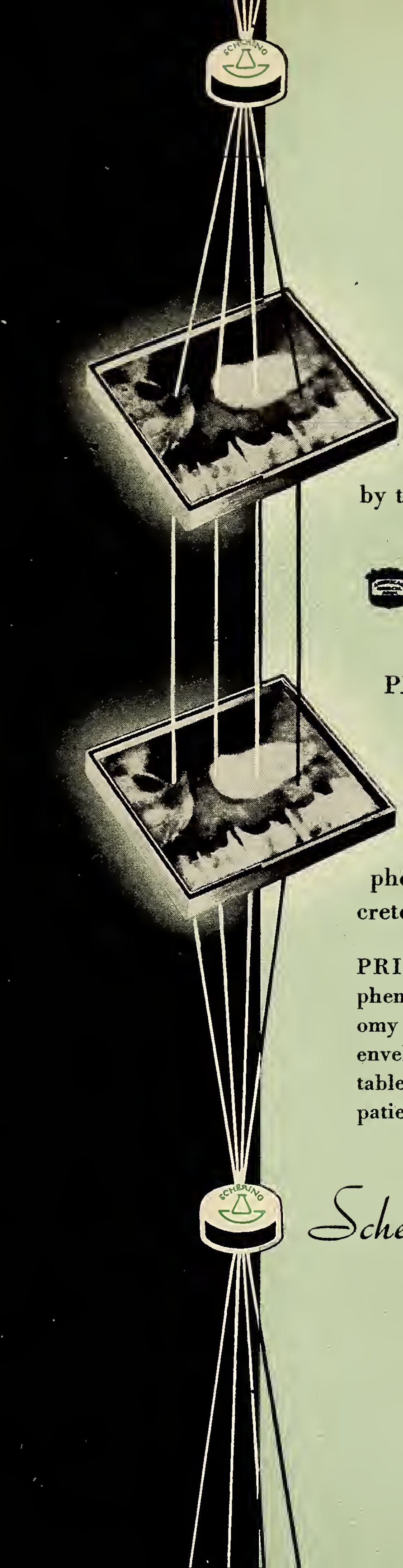

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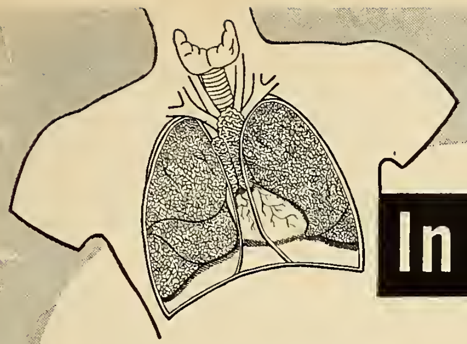

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*Stainsby, W. J.; Foss, H. L., and Drumheller, J. F.: Clinical Experiences with Penicillin, Pennsylvania M. J. 48:119 (Nov.) 1944.

McBryde, A.: Hemolytic Staphylococcus Pneumonia in Early Infancy; Response to Penicillin Therapy, Am. J. Dis. Child. 68:271 (Oct.) 1944.

Stainsby, W. J., Chairman, Commission for the Study of Pneumonia Control of the Medical Society of the State of Pennsylvania: Up-to-Date Facts on Pneumonia, Pennsylvania M. J. 48:266 (Dec.) 1944.

Larsen, N. P.: Observations with Penicillin, Hawaii M. J. 3:272 (July-Aug.) 1944.

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154.*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60.

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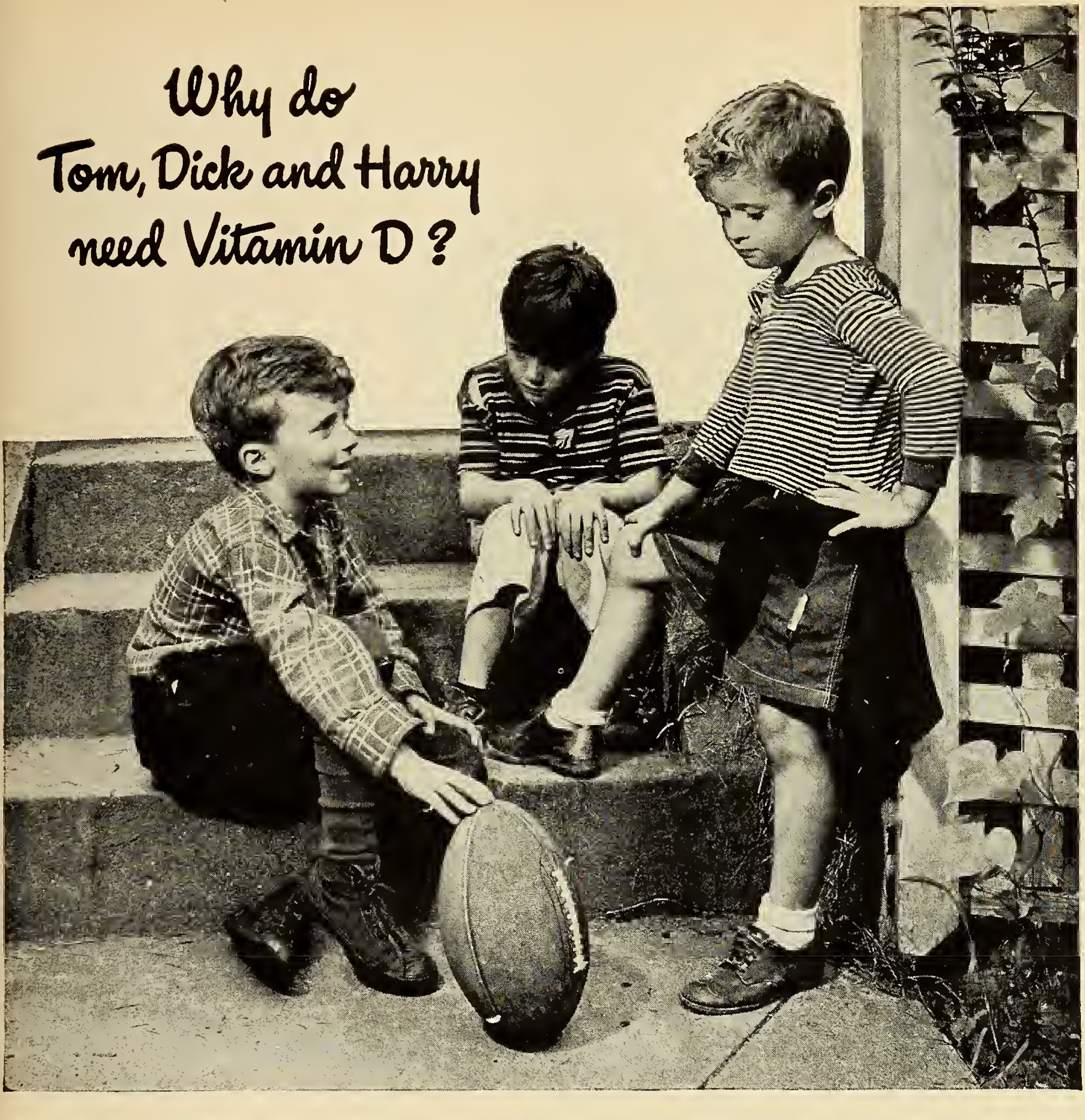

Growing children require vitamin D mainly to prevent rickets. They also need vitamin D, though to a lesser degree, to insure optimal development of muscles and other soft tissues containing considerable amounts of phosphorus . . . Milk is the logical menstruum for administering vitamin D to growing children, as well as to infants, pregnant women and lactating mothers. This suggests the use of Drisdol in Propylene Glycol, which diffuses uniformly in milk, fruit juices and other fluids.

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Not for just a year

Recognition of rickets in 46.5% of children between the ages of two and 14 years[1] has demonstrated the necessity for vitamin D supplementation, not for just a year, or for infancy alone, but throughout childhood and adolescence—as long as growth persists.

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1. Am. J. Dis. Child. 66:1 (July) 1943.

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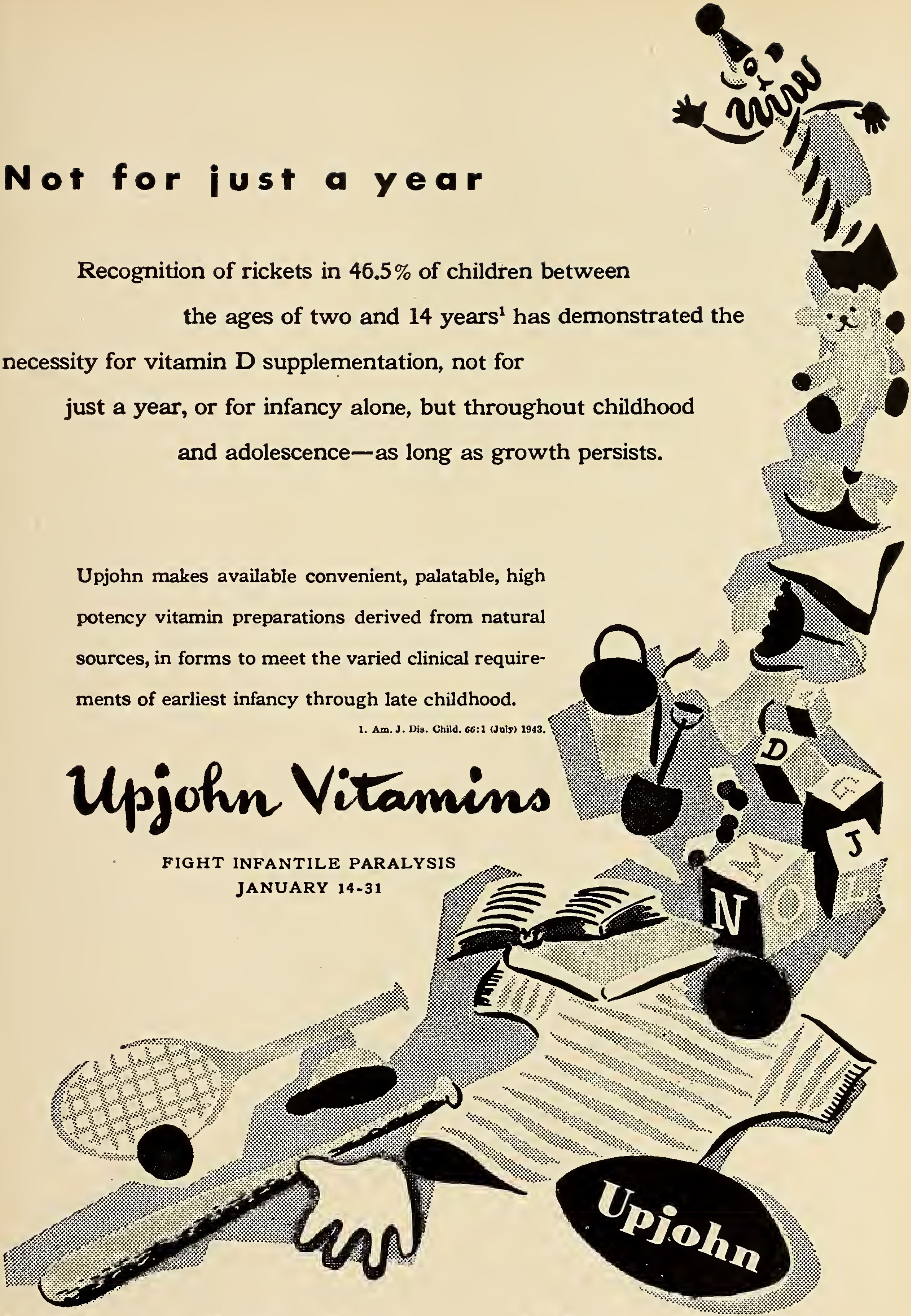

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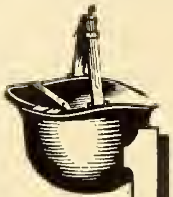


1946

ARMOR AND ARMAMENTARIUM

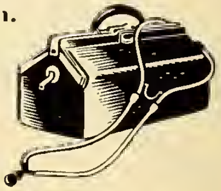
Guns are silent and grass grows in the foxholes, but there can be no peace treaty in the endless war on mankind's immortal enemy—Disease. Home comes the physician from his lifesaving on the battlefields of man-made death abroad to march again beside his colleagues who have so valiantly held the casemates of health at home.

Battle front and home front, boulevard and dirt road, the mighty facilities of the medical center and the challenge of practice in the lonely farmhouse—all are the front line trenches in humanity's continuing crusade to tame cannibal protoplasm. There is no discharge in that war.

The first cry of pain in the world was the first call for a physician. It has been answered as it echoed down the centuries; it will be answered in the unrolling years of the future.

As this questioning year of 1946 opens with the world convalescing from malignant political disease, we would like to claim the privilege of welcoming the thousands of physicians returning from unparalleled service on war fronts—of saluting those who shouldered such heavy burdens at home—of expressing the confidence that the traditional unity of the profession armed with new and potent weapons will drive the front lines of the war on disease ever forward.

We know that we are joined in this expression by all organizations which seek to play their roles, large and humble, as institutions of supply to those "bound by the covenant and oath, according to the law of medicine." S. H. Camp and Company, Jackson, Mich.



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"Sometimes I feel so good it almost scares me.

"This house—I wouldn't swap a shingle off its roof for any other house on earth. This little valley, with the pond down in the hollow at the back, is the spot I like best in all the world.

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"I've got a little money coming in, regularly. Not much—but enough. And I tell you, when you can go to bed every night with nothing on your mind except the fun you're going to have tomorrow—that's as near Heaven as man gets on this earth!

"It wasn't always so.

"Back in '46—that was right after the war and sometimes the going wasn't too easy—I needed cash. Taxes were tough, and then Ellen got sick. Like almost everybody else, I was buying Bonds through the Payroll Plan—and I figured on cashing some of them in. But sick as she was, it was Ellen who talked me out of it.

"'Don't do it, John!' she said. '*Please* don't! For the first time in our lives, we're really saving money. It's *wonderful* to know that every single payday we have *more* money put aside! John, if we can only keep up this saving, think what it can mean! Maybe someday you won't have to work. Maybe we can own a home. And oh, how good it would feel to know that we need never worry about money when we're old!'

"Well, even after she got better, I stayed away from the weekly poker game—quit dropping a little cash at the hot spots now and then—gave up some of the things a man feels he has a right to. We didn't have as much fun for a while but we paid our taxes and the doctor and—we didn't touch the Bonds.

"What's more, we kept right on putting our extra cash into U. S. Savings Bonds. And the pay-off is making the world a pretty swell place today!"

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Ovaltine offers many advantages as a nutritional supplement to the diet of convalescence. This delicious food drink is rich in needed minerals, vitamins, and biologically adequate proteins. Its appealing taste invites consumption of three or more glassfuls daily. Its notably low curd tension encourages rapid gastric emptying, an important factor in maintaining good appetite.

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PROTEIN	31.2 Gm.	VITAMIN A	2953 I.U.
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IRON	11.94 mg.	COPPER	.5 mg.

*Based on average reported values for milk.

the healing power of sleep

Adequate rest is an important factor in the successful treatment of upper respiratory infections. Frequently, nasal congestion keeps the patient irritable and sleepless. Solution 'Tuamine Sulfate' (2-Aminoheptane Sulfate, Lilly), administered by spray or dropper, quickly shrinks the nasal mucosa, permitting easy, natural breathing. There is no secondary engorgement or central-nervous-system stimulation. Specify Solution 'Tuamine Sulfate,' 1 percent, for home use. The 2 percent solution is recommended for office procedures in which maximum shrinkage is required.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 January, 1946 No. 1

WHAT PUBLIC HEALTH EXPECTS OF THE PRIVATE PHYSICIAN

HAVEN EMERSON, M.D.
Professorial Lecturer in the School of Public Health
University of Minnesota
Minneapolis, Minnesota

THE first three lectures to commemorate the leadership and inspiration of Dr. John W. Bell in the tuberculosis campaign of Hennepin County were devoted to topics so nearly akin to what you have assigned to me today, that I fear some inevitable repetition of fact or of opinion. However, since man's experience with tuberculosis has been longer than his acquaintance with either the art or science of medicine, some reiteration of ancient truths may be excused. Permit me to develop the topic in hand in part historically and further by reference to the formal requirements of contemporary sanitary law and to the current experience of your own community.

The first epidemiologist Hieronymus Fracastorius gave in his classical volume De Contagione in 1546 the first clear description of the contagion of consumption. Without the ability to see or identify the tubercle bacillus he coined the expression "seminaria of disease" and wrote "These seeds are the carriers of the contagion and that they are the first origin of the disease there can be no doubt. It may be considered that the force of the disease lies in these seeds since they have the power to propagate and reproduce their own kind."

This wise and philosophical student of the mass manifestations of communicable diseases, wasted no time on environmental, economic, social or racial factors. He found a disease of universal prevalence, the spread and continuity of which he knew to be due to the infection of the well by the sick, and he declared with a convincing simplicity that the need was "to combat germs and prevent contagion."

Down the ages this eternal truth has resounded, and those whose ears have been deaf, whom ignorance and selfishness have made blind, whose reasoning has lacked logic, have paid the penalty of sickness and death in their time.

Leaping the four centuries from Fracastorius to Frost, from Verona to Baltimore, from the era of Italian renaissance to the first fruiting of systematic epidemiology in our own country, we read the brief statements of the two conditions which limit the propagation of the tubercle bacillus: (1) "In order to escape from its host it must cause a lesion which breaks through to the surface—in general an extensive lesion which severely damages the host; (2) it succeeds in producing such lesions in only a limited proportion of infected persons."

"Other human pathogens may be subject to one or the other of these conditions but not to both."

"The combination of these two limiting conditions is the peculiarity of the tubercle bacillus which makes it more amenable to control by case isolation than are such diseases as diphtheria, scarlet fever or measles."

If we may define public health services as the application of the sciences of preventive medicine by public authority for social benefit, then the

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The John W. Bell Tuberculosis Lecture delivered before the Hennepin County Medical Society, December 3, 1945.

private physician must be expected to discover the infected person, identify him by name and address to public authority, and aid in revealing the source of infection in this index case and the tracing of secondary or associated infected persons among contacts.

To follow the implications of Frost's two premises, it is only the sputum-positive cases that need to be isolated in order to prevent the spread of infection, but all clinically recognizable infected persons should be known to the health department. Furthermore, and to make our task the easier, for the eventual eradication of human tuberculosis, it requires only that the rate of transmission be held permanently below that required to carry on the succession.

If from year to year and generation to generation there is a reduction in the number of infectious hosts, the end must be extermination of the tubercle bacillus. If we but keep the present balance of a diminishing number of sources of infection, human tuberculosis will disappear. With the practical or near approach to eradication of bovine tuberculosis among dairy cattle, the infected open or positive sputum case of human tuberculosis is the only source of infection in the United States today.

In France and in most of Continental Europe there is little confidence in ultimate eradication of tuberculosis. Their experience with wars and hunger have dulled their imagination and postponed a vision of the future which to us seems vivid and near. The Frenchman clings to the philosophy of Calmette which presupposes universal exposure to the tubercle bacillus and therefore calls for universal artificial immunization.

Our experience leads us to the contrary conclusion, that tuberculosis is in the process of disappearance which can be awaited with confidence while persisting in our efforts to separate the sick from the well and reduce progressively the number of positive sputum patients at large among us.

As the moderate inoffensive alcoholic habitué is the reservoir from which the chronic alcoholic and inebriate mental derelicts are recruited, so it is the infected persons revealing no subjective or objective evidence of active pulmonary tuberculosis from whom are developed the active, progressive positive sputum patients who constitute the links in an age-old chain of infection. For administrative justice to all the people and for competent scientific epidemiology of the disease by the health department, all cases of appreciable clinical tuberculosis of any part of the body must be reported whether or not at the time the tubercle bacillus has been found in the body discharges.

As in the administrative control of typhoid fever we have passed through several evolutionary phases of method, from the general to the particular, from the broad programs of water purification, sanitary sewage disposal, and pasteurization of milk to the meticulous detective search for the carrier and the supervision of his way of life, so have we moved from popularization of personal hygiene, from mass information, to a point where nothing short of universal x-ray diagnosis will suffice for control of tuberculosis.

What shall be our immediate and future program directed not towards a remote and indefinite objective, but geared and adapted to reach a terminal point, now obviously within our reach? We must gird ourselves for the last lap, the crowning competition and reward among the states, between cities, counties and ultimately between nations. Already we see in your own state and as well in rural districts and in large cities, cases of optimum health, areas and communities among which no death from tuberculosis has occurred over a five-year period, broad population units from which the young people coming to your great University are free from tuberculous infection.

The challenge ahead is stirring. Will you let Utah, Idaho or Washington claim the distinction of being the first state without a death or a new case of clinically active tuberculosis reported within a year or a quinquennium?

It was with a distinct emotional thrill, a sense of lift and elation, that I visited recently a county of the southern tier where annual death rates from tuberculosis had averaged about 5 per hundred thousand per annum. And it was with no less interest and concern that I found a northern county so effectively busy with case finding that within two years it may be expected that every person, old and young, will have had a permanent x-ray record of the chest.

To shape our program to a certain and successful conclusion we must discard traditional generalities. Of course, we shall be concerned with nutrition, housing, working environment, length of work days, economic justice, recreational facilities, and rehabilitation of the post sanatorium patient. These are but the expressions of an enlightened humanism but no one or all of these will materially affect the incidence of tuberculous infection or manifest tuberculous disease.

To be definite and specific we must use as direct methods as we would for smallpox or typhoid fever, granting that social assistance is worthy of support, but not at the cost of overlooking the primary role of the spreader.

All control of communicable disease begins with prompt information as to the occurrence of the disease in question in a certain person at a certain address. Verification of the diagnosis may be needed. Search for prior and subsequent cases among contacts must be prompt and complete. Each person capable of infecting others must be so controlled as to be no hazard in the community, preferably by being admitted to a tuberculosis hospital. Since tuberculosis is commonly a silent and insidious invader, reliance upon complaint of illness by the patient or diagnosis without x-ray of the chest cannot be longer tolerated. I must refrain from further repetition of such truisms long well known to official and voluntary agencies. Let me but say that nowhere is the modern program against tuberculosis better expressed than in that brief and authoritative little handbook by Henry D. Chadwick and Alton S. Pope, "The Modern Attack on Tuberculosis," obtainable for a dollar from the Commonwealth Fund. In order of importance are:

1. Isolation in sanatoria of all known open cases of pulmonary tuberculosis.
2. Good medical care preferably in institutions of known active, though not at present open, cases.
3. Systematic search for early and unrecognized cases and their isolation if discharging tubercle bacilli.
4. Social and medical protection of underprivileged groups who are endangered by tuberculosis by reason of ignorance, poverty, unemployment, hazardous occupations and crowded conditions of living.

As fewer cases are reported and discovered, open positive-sputum patients must be the main objects of control, by increasingly effective measures at home and in sanatoria.

To quote Frost again:

"As the disease becomes rarer, less a matter of everyday experience, we may be assured that public opinion will not only support but will even demand more rigid isolation."

How does this proposal for specific practical measures compare with today's performance?

One can only marvel at the favorable picture of falling mortality and reported incidence of tuberculosis in Minnesota and Hennepin County in the light of the record of reporting.

In the state of Minnesota in the period 1910 to 1940 when the tuberculosis death rate fell from 109.4 to 29.7, the percentage of deaths not previously reported as cases of the disease fell from 86 to 15.5 per cent.

It is probable that less than half of the active cases of tuberculosis have been known to the authorities at any time in the past thirty years or are today so known.

To quote from the 1922-43 report of the Minnesota State Board of Health, "In 1910 there were more than three times as many deaths from tuberculosis as there were reported cases. Tuberculosis is a reportable disease, but it has never been adequately reported."

Michigan today leads all the states in the ratio of new cases of tuberculosis reported in a year to deaths from this disease in the same period, 3.25, and yet evidence is abundant that not less than five and probably between seven and ten cases could be discovered and should be reported if the private and public resources of medicine were used to full advantage.

The citizen may well ask why! Is a requirement of the Board of Health, having the force and effect of a law, to be disregarded with impunity, and if so, who enjoys the privilege of this violation of the spirit and intent of the law? May I respond to the title of my discussion by saying that the humblest expectation of public health is that physicians recognize tuberculosis prior to the patient's death and report every person infected and receiving medical care, whether or not such patients are at the time discharging tubercle bacilli.

And now for the city of Minneapolis. In the year 1919, 16 per cent of cases of tuberculosis reported to the Division of Public Health, were reported less than one month prior to death or actually after death by declaration on the death certificate. Twenty-five years later, in 1944, 5.8 per cent of reported tuberculosis was reported within a month of death or after death, a substantial improvement. This is not, however, a creditable record and must be explained by the medical profession. Permit me to suggest now that the Hennepin County Medical Society appoint a permanent committee on tuberculosis, to which should be referred by the Division of Health, for inquiry and periodical report to the membership of the society, each instance of a report of tuberculosis made either within a month of death or only by the death certificate.

In making special study of similar situations in Philadelphia and Boston I found in the latter city that by fifty cases of chronic pulmonary tuberculosis with intermittent positive sputum not reported until within a month of death, there had been, over a period prior to the reports of these patients to the health department, 1,500 person years of exposure of intimate household or family contacts, or an average of thirty person years of exposure per case of tuberculosis, or six persons exposed for as long as five years each, to a patient lacking any semblance of sanitary control at home and living out the years of his disease without any sense of obligation to avoid infecting others.

Until the practicing physician reports all cases of tuberculosis whether open or closed, positive or negative sputum, to the Division of Health at once on making provisional or suspected diagnosis we shall not be in a position to give the community, the family, the fellow workmen, a protection they are entitled to.

This city has an enviable record of progress in abatement of tuberculosis revealed in an almost uninterrupted fall in the resident death rate from this dease from 222.5 per 100,000 of population in 1889 to 30.4 in the year 1944. Mathematical calculations suggest that, in a disease spread by a chronic carrier and from no other source, the final stages of reduction to entire disappearance should be at a more rapid rate than when the disease is widely prevalent. Chadwick and Pope suggest a probable death rate from tuberculosis in 1980 of ten and a possible disappearance from the list of causes of death by the end of this century. The right answer is anybody's guess, but of one thing we can be certain — any slowing in the rate of regression in the next few decades will be due to professional and civic indifference and not to any lack of the basic facts or of wise guidance as to policies, methods and tests of performance.

The physician in private practice is not only the trustee of the science of human biology, and the sole representative of society licensed to deal responsibly before the law with life and death, but he is the medical conscience of the community. Upon his precise, prompt, wholehearted co-operation, the entire structure of modern public health depends. If in a mistaken spirit of economic self-protection or in the expectation of financial betterment he opposes publicly adopted policies of disease prevention and control within the framework of sanitary law, he destroys in large measure his own professional prestige and draws down upon himself the threat of that most undesirable proposal of social utopians, a compulsory and state-supported practice of medicine, than which I can conceive no worse blow to medical and social progress in our nation.

It has come to my attention here as in other cities where I have made studies of public health services that some physicians and even specialists in tuberculosis consider that apparently healed so-called reinfection type tuberculosis is of no concern to public authority and they accept no obligation to report such patients. This is a mischievous and obstructive practice as it prevents both epidemiological and administrative services indispensable to the proper functioning of a registry and control system.

I find to my surprise a sharp distinction between the attitude of the medical profession here and that in my home town. Any person in New York, regardless of economic status, is welcomed at a tuberculosis diagnostic clinic of the Departments of Hospitals and Health. If the patient has or can obviously afford the services of a private physician, or has been referred for diagnostic consultation to the tuberculosis clinic by his own physician, the record and diagnostic opinion is reported to the family physician. The accuracy, competence, economy of the standard x-ray and personal diagnostic service for the control of this communicable disease are of such a kind as to contribute to, not detract from, the services of the private practitioner.

No private sources could have offered the 500,000 x-rays of the chest as part of the continuing screening process of recent years in New York City. The radiologist and the internist and the tuberculosis specialist have gained, not lost, by the widespread concern with unsuspected pulmonary disease revealed by x-rays of presumably healthy persons.

From a beginning in 1900 when practically all the patients coming to the first tuberculosis clinics were cases of advanced disease there has been an increasing proportion of all clinic patients found to have no tuberculous disease until now almost

80 per cent of the clinic clientele is found to be non-tuberculous.

Certainly it is contrary to good public policy, against the interest of patients and of the local medical profession that a tax-supported diagnostic service for tuberculosis should be denied to any person, employer or employe, mistress or maid, rich or poor, for the reason that many such persons could afford the consultation and x-ray fee of the private practitioner. People should be encouraged to come to such free tuberculosis diagnostic clinics, and their physician of choice or preference should receive the report of the clinics' findings.

The free chest x-ray to establish or exclude the diagnosis of pulmonary tuberculosis appears to me to be as much a right of the citizen as it is a duty of civil government to offer, and entirely comparable to, the blood serology offered by the diagnostic laboratory of the state or local department of health to identify cases of syphilis.

If under such ideal conditions of organization as have already been proved practicable, a miniature x-ray of the chest and a blood test for syphilis can be provided by public authority for little more than twenty-five cents per person, obstruction against the widespread, not to say universal, use of such tests by the public would bring nothing but discredit upon the medical profession.

Among the factors leading to delay in reporting of cases of tuberculosis by the private practitioner is the inclination of some physicians to spare the feelings of patient and family by not declaring the actual diagnosis and then by attempting to continue a regime of care of the patient at home as long as the family can continue to pay for his services. I am not at the moment concerned with the ethical weakness of the physician's position in such cases, but solely with the effect upon the origin and spread of the infection in the community.

Home care of the tuberculous is of course possible but except under relatively rare conditions whether for the well to do or for the wage earner, it is a distinctly second-best choice from the point of view of therapy and permits almost inevitable transmission of infection to household contacts.

When we recall the high probability of infection of nurses under even rigid hospital discipline and with excellent equipment and management in sanatoria, we cannot doubt the higher probability of such infection in home care of the tuberculous.

An instance of misfortune due to failure of a plant physician to report a case of tuberculosis in a young woman applicant for employment came to my attention as illustrative of indifference on the part of an occasional physician to his obligation under the law. The pre-employment applicant had a child of tender age. The mother felt well, ignored the doctor's diagnosis, sought and obtained employment elsewhere, and within a year was diagnosed as advanced tuberculosis and the sanitarium prognosis is grave. What the plant physician did not realize and probably is not yet aware of is that the result of the report he should have sent would have been medical and nursing follow up and offer of assistance by the Department of Health, persuasive education in the interest of patient and child, a probable early admission to hospital care, avoidance of infection of the child and a rehabilitated life of self-support.

It is well from time to time to remind ourselves that the reassuring progress in control of tuberculosis has been in spite of all the incompletenesses of reporting, in spite of delayed reporting, in spite of the insidious and silent nature of early pulmonary disease and in spite of the entire lack of any specific resources for creating immunity or for cure in the chemotherapeutic sense.

We know so much we do not use that there is no excuse for discouragement or delay. The question is one of relative speeds of progress, always the hope that within our lifetime, our offspring will escape wholly what we know has decimated our predecessors and cruelly handicapped our contemporaries. When my grandparents made their home in New York City in 1838 the death rate in that city from tuberculosis was not less than 300. When my parents started their family in 1868 the rate was 250 or over. In the years when our children were being born in the first decade of this century the rate was about 150. Our grandchildren are living in the same city where a rate of 45 is current today. In each generation but the latest, the disease has exacted its toll of disability or death.

May I suggest that with economy and efficiency we can guarantee freedom of the succeeding generations from tuberculosis if we undertake the following programs—one of discovery

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THE PROBLEM OF MEDICINE IN RURAL HEALTH

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I UNDERSTAND that your Program Committee chose me to discuss the problem of medicine in rural health in this symposium because I am a member of the Committee on Rural Medical Service of the American Medical Association. Since I have been a member of this committee only a few weeks and the committee has not issued a report of its findings, the material in this paper is not to be construed as that of the committee.

Rural health has been a problem ever since this country was founded. An increasing interest in rural health has developed, especially during the past fifteen years. The Farm Foundation, Farmers Union, Farm Bureau Federation, Grange, and the Federal Security Administration, have departments or committees devoted to a study of the problem. The Farm Foundation sponsored a conference on medical care and health services for rural people in April, 1944. Representatives of the above-mentioned farm organizations, government agencies, state agricultural colleges, farm publications, medical, dental, and hospital associations, United States Public Heatlh Service, Children's Bureau, United States Senate Committee on Education and Labor, American Legion, National Congress of Parents and Teachers, et cetera, attended the conference. According to the printed report of this conference[1], availability and cost are the two outstanding problems in rural medical care.

We are all aware of the fact that physicians have gradually moved from the strictly rural areas to the larger urban centers during the past twenty-five years. There are statistics available which show that many physicians have moved from the rural states to industrial states. This is especially true in the Southern states and also, to some extent, in the Great Plains states during the drouth years. The war served to increase the shortage in these areas because many physicians chose to enter military service rather than stay in the states with low per-capital incomes. The reasons for this migration are obvious. Inadequate remuneration, the necessity for traveling long distances to reach the patient, lack of hospital and adequate diagnostic facilities, absence of consultation service, long hours of work, inadequate facilities for education of their families and for recreation, and difficulty in arranging for vacations or postgraduate study, have driven too high a percentage of rural physicians into the larger centers. The solution of this problem is extremely difficult. The complaint of non-availability of physicians comes mainly from the sparsely populated areas, particularly the Dakotas, Nebraska, Montana, Wyoming, Nevada, Arizona, New Mexico and Idaho. In these states the population is not only small, but the distance between trading areas and centers are great, roads—except the main highways—are poor, and there are deficiencies in the usual facilities for transportation. It would seem that there is small chance of changing all of these basic factors in this particular area. The problem is to bring the doctor to these people, or to make it possible for the people to get to the doctor.

Much has been written concerning the reasons for the failure of young doctors to locate in rural areas. The most common reason given is that the average small town does not have hospital facilities. A great wave of enthusiasm is spreading throughout the rural sections of this country for the construction of small rural hospitals. However, it will be extremely difficult to bring this about because of the initial cost of construction and equipment, the cost of maintenance, the difficulty in maintaining adequate medical and nursing personnel, and, most important of all, the tendency of rural people to by-pass the local physician and small hospital to consult a physician, and possibly enter a hospital, in the larger center, regardless of the distance. It is true that there are notable exceptions to this rule, for all of us know of practitioners in small towns who have retained the complete confidence of their people and have successfully operated small hospitals in sparsely settled localities. After a rather careful study of the problem in my home states, in which the above-mentioned factors are very apparent, I am convinced that it is unwise for the average small community, even though it be a county seat, to

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Read at the North Central Conference, Saint Paul, Minnesota, November 11, 1945.

construct a small hospital with about 25 or 30 beds. Several such hospitals were constructed in North Dakota through government grants during the drouth period, but none of them was a success. They failed because it was impossible to hold a successful physician who could do all the things demanded of him, particularly in surgery, even though hospital beds were available. The same fate lies in store for those small communities who attempt to build small hospitals unless the hospital is subsidized in one way or another, facilities for laboratory and x-ray diagnosis are provided, and consultation is readily available. I believe it is much more sensible to encourage the development of small community health and diagnostic centers, strategically located in the smaller towns. Young physicians can undoubtedly be influenced to locate in small towns, provided office facilities, living quarters, and a few hospital beds for obstetrical patients and emergency cases are available. The ambitious young physician, particularly the one who wishes to specialize, will not stay, but his experience will be invaluable, he will probably be able to save a little money, he will be performing a real service to the surrounding rural population, and when he leaves, another young physician can be found to replace him.

The relative cost of a service, or commodity, depends on the income of the consumer and his evaluation of the worth of the service or commodity. The cost of medical care is a problem of great concern to rural people, according to their spokesmen. Of necessity, the cost of rural medical care is relatively high, if the physician is obliged to travel miles to reach the patient. The fees for the actual services rendered by the rural practitioner are not exhorbitant; they are usually much lower than the fees charged for comparable services in urban areas. Improvements in transportation, particularly in the development of good highways which are passable throughout the year, will accelerate the growing tendency of rural people to bring the patient to the doctor. This will reduce the cost of medical care; it will conserve the time of the physician, who, too often, spends the majority of his working hours in traveling to and from his patient.

The most serious difficulty facing the farmer, however, is the variability of his income. This is particularly true in those areas in which there is a sparse population, and in which the factors which tend to increase the cost of medical care because of the distances to the physician and hospital, are present. I believe most students of rural economics will agree that if the income level of farm families could be elevated, at least to the point where it has been during the past five years, there would be very little concern over the cost of rural medical care. Miss Elin Anderson, in summarizing the Farm Foundation Conference held in the spring of 1944, said: "The crux of the problem, as we know, is economic."[2] Dr. R. C. Williams, of the United States Public Health Service, who was chief medical officer of the Farm Security Administration during the drouth years, said, at the same conference: "Perhaps all I have done has been to rear the ugly heads of some impossible questions, but I do think the whole thing comes right back to that; all our discussion, must, although it may wander and veer around, come automatically back to that crux of the situation—in short, to money."[3]

The only solution of the problem of cost of rural medical care is to raise the level of the farmer's income, or, reduce the cost of the physician's services, or, spread the cost of medical care through a prepayment medical insurance plan. The farmer must raise his own income, with the help of Government subsidy, if necessary. A reduction in the rural practitioner's fees cannot be made unless the majority of his patients are brought to him. If his income drops he will simply move on. Prepaid medical insurance will solve the problem, provided it can be operated on a sound actuarial basis, and the farmer is able and willing to pay for it. Many spokesmen for the farmer insist that he cannot afford to spend $48.00 or $50.00 per year for catastrophic medical and hospital protection. The reason given is that his total cash income will not warrant such an expenditure. A government agency has estimated that in 1944, 40 per cent of the farmers had an annual income of $700.00 or less. This is an impressive figure, but does it mean that 40 per cent of the farmers had a *cash net income* of less than $700.00 after the cost of rent and food had been deducted? There are millions of families in urban districts who have a net income of less than $700.00 after the cost of rent and food has been deducted. In considering such figures, it should be emphasized that the remaining 60 per cent of the farm population supposedly had a cash net income of over $700.00 per year. Economists, particularly those who are directing their attention to the cost of rural medical care, might well ask the farmer what he spends his cash income for. Is it not possible that many of them squander $48.00 or $50.00 per year on trivialities, which could well be used for their health protection. This, of course, involves the question of evaluating the things in life. No nation in the world spends as much money for tobacco, cosmetics, candy, movies, etc., as we do in the United States, and this tendency is as prevalent in rural areas as it is in urban areas. Health education will impress all of our people with the value of good health, and the need for budgeting the family income to pay for the illness that will certainly come, whether that payment be on a fee-for-service basis, or it be covered by an insurance plan.

The following four-point program is offered for the solution of the rural medical and health problem:

1. The number one objective in the constructive 14-point program of the American Medical Association for the extension of improved health and medical care to all people is as follows: "Sustained production leading to better living conditions, with improved housing, nutrition, and sanitation, which are fundamental to good health; we support progressive action toward achieving these objectives." A sound agriculture in which the uncertainties of annual income will be reduced to a minimum through irrigation, where necessary, utilization of modern methods and machinery, and the education of the future farmer in our high schools and agricultural colleges will reduce the number of farmers who find it difficult to pay for medical care or health protection.

2. The development of prepaid medical insurance plans which will succeed in the rural areas. Unfortunately, there is not sufficient actuarial data available at present on which such plans can be developed. As physicians, we must assume the responsibility for the development of plans which have some hope for success. In doing so, we should realize that there may be losses, especially at first, but those of us who render the services must be willing and able to absorb the losses. Almost all physicians, and most of the farm organizations in this country, are opposed to a system of federally controlled, compulsory, medical insurance. It would seem wise to explore the possibility of government subsidy of local prepaid medical insurance and hospital plans in those states where definite need is demonstrated, provided, however, that the plans are administered by the proper local agency in the states involved, with the help and advice of the medical profession. This suggestion may be violently opposed by some, but we must remember that the majority of the complaints being offered that medical care is inadequate and costs too much, come from those areas which, because of local economic conditions, may not be entirely able to correct the situation themselves. Federal aid to such areas, under a system in which the funds are controlled locally, will not jeopardize the American system of free enterprise.

3. Expansion of public health facilities. We all know that public health facilities have not been extended to the rural communities as rapidly as they should have been. The reasons are the same as for the fundamental problems discussed above. Trained public health personnel has not been available and rural people have been unwilling to levy sufficient taxes to carry on a successful public health program. In late years, funds have become available through social security funds for the development of more and more public health units. The state health department controls the funds allocated to the unit, usually chooses the personnel, and determines the policies. I believe that we, as a profession, should support a program in which a well-organized public health unit will be developed in every rural community which has a population large enough to support it. Preventive medicine is extremely important, and has not been given its proper emphasis in rural areas. The development of rural public health units will offer an inducement for young physicians to locate in rural areas because they can be placed on a definite income for the public health work they do in the community. In addition, if some of the plans now being made by the Federal Government materialize, office and hospital facilities and living quarters will be provided in the community health center. We must insist, however, if we are to support this program of expanding public health facilities, that preventive and curative medicine be clearly defined. With the control of this program resting in the state or local subdivision, it should be possible to develop a common understanding so that the public health department will not take over the practice of medicine. One of the most important functions of such a health unit will be that of health education, which has been woefully

weak in the past, especially among rural people. When the people know how to prevent disease, and what to do when they are confronted with an illness, they will have a better appreciation of the value of good medical service and will be more willing to pay for it.

4. Continued study of the problem of rural medical care. Each State Medical Association should have a committee to study the problem. The medical profession should co-operate with every agency or organization in the state which is interested in the welfare of the people. We must not only support, but also provide the leadership in, the state health planning committees, whose membership should represent all organizations and interests in the state. Through such contacts we will soon find that the people are keenly interested in the problem of medical care. Laymen may not understand all phases of the problem; they may have some wrong ideas of what can be done, but experience shows that through conferences around the table, a common viewpoint can usually be reached.

References

1. Medical Care and Health Services for Rural People—Report of conference held at Chicago, Illinois, April 11-13, 1944. Published by Farm Foundation, 600 South Michigan Avenue, Chicago 5, Illinois.
2. Ibid: Page 62.
3. Ibid: Page 147.

WHAT PUBLIC HEALTH EXPECTS OF THE PRIVATE PHYSICIAN

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of pulmonary tuberculous disease and the other of isolation or adequate sanitary supervision of persons discharging the tubercle bacillus from the nose and mouth. We shall achieve the first objective most quickly and at least cost if we concentrate upon x-ray surveys at public expense of the following five categories of persons:

1. Those with suspicious pulmonary symptoms
2. Contacts with known cases of tuberculosis
3. All general hospital admissions
4. Racial and economic groups showing abnormally high incidence
5. Workers in trades exposed to silica dusts.

To achieve our second goal we must have both popular and unanimous professional support for every detail of diagnosis, reporting and sanitary control of infected persons.

The Sanitary Code of the City of New York like those of most other cities of our country includes ordinances requiring:

1. Reporting of all forms of tuberculosis, by physicians and by persons in charge of hospitals, institutions and dispensaries, giving full name, address and age of the patient, within twenty-four hours of the time when the case is diagnosed. (All such records are to be confidential)
2. Isolation of patients capable of spreading the disease, a duty of the physician, if the patient is in a communicable stage.
3. Exclusion of children with communicable tuberculosis from day-care institutions
4. Exclusion of teachers, custodians, principals, etc., with tuberculosis from public, private or parochial schools
5. Forbidding of spitting in public places
6. Pasteurization of milk
7. Segregation of non-coöperative or recalcitrant spreaders of tubercle bacilli by use of the authority of the courts if necessary.

In closing, let me say that what the public health expects of the private physician is no more and no less than it requires of every other citizen, i.e., prompt compliance with the law. Way over and beyond this, popular opinion and medical tradition look to the medical profession with confidence that each increase in knowledge will be made available, appropriately under the conditions of private practice, and so far as need and economy are dictated by civil government, to give accurate diagnosis, humane treatment to the sick and prevent the spread of communicable disease from the sick to the well.

The medical profession has exercised the disciplines of education and of ethics among its members. Any failures of standards within these fields will be best corrected by giving the facts to the organized local and state medical societies.

King Edward VII of England, when told that tuberculosis is a preventable disease, asked why it has not been prevented. It can be prevented in our time if we use our present resources.

RELOCATION OF PHYSICIANS IN IOWA

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OUR work on the relocation of physicians in Iowa started about a year ago when the Bureau of Information in Chicago, at the AMA headquarters, sent us a form to be filled in for each county in Iowa. You are all familiar with those forms, I am sure. One side is devoted to information about the health facilities of the county—the hospitals, public health and other medical facilities, number of physicians in each age group. The other side of the form is given over to information about the county itself—its character, location and climate, population, principal cities, schools, retail sales, telephones, miles of highway and dwelling units. The first form also asked for information about the churches in the county.

The American Medical Association provided some of the information from its office, and asked us to obtain the rest. We sent the forms to our county society secretaries and asked them to fill in as much as they could. What they did not provide, we dug up as best we could. Many of them—in fact, most of them—did not list the doctors by age groups, and we had to do this for practically the entire state.

This work was completed in the spring, but we felt it did not give us a complete picture, and so the first of May we wrote every county, stating that a few doctors were asking about locations because of release from service, or because they were physically unfit for service. We asked the counties to let us know if they needed additional doctors, and what towns needed them. We also said, "If you are holding the locations for your own doctors who are in service, and don't want anyone, tell us that also."

We got a pretty good response on that, although the towns which were listed as needing physicians were small ones, 500 to 1,000 population for the most part. Also many counties said they did not want new physicians, but were holding locations for their own doctors in service.

The next step we took may not meet with unqualified approval, but it did give us some clues. We talked to detail men covering the state, asking them where doctors were needed. Usually they could give us the names of a number of towns that really needed doctors.

Next, we began to get requests from doctors who were getting out of service asking about locations. We wrote them very fully of the towns we had listed, giving all of the information we had about them, and giving them the name of the doctor whom they should talk to in each county.

Now many of the doctors are coming into the office to talk over the matter of getting established. Each one is an individual problem, and our method is probably never twice the same in talking to them. We find out whether they have practiced before, whether they wish to start out on their own, whether they want an assistantship to start with, or what specialty they may have. If they have a preference for a certain section of the state, we go over the towns in that locality. We tell them what we know about the county medical society, whether it is active, what the hospital facilities are or what the prospects are for new hospitals. We give them the names of doctors to talk to, and advise them to talk to as many doctors as they can. In fact, we give them as complete a picture as we have.

Some of these doctors have visited various towns in the state, talking to doctors in each place, and they have come back to report that there is a great need for doctors everywhere—that they can settle any place and make a go of it. Persons of their temperament will probably succeed anywhere, too.

Some of them are uncertain, however, particularly when starting out on their own for the first time, and they need encouragement. They are afraid it's going to be a lot tougher than it really will be. These are the ones who are encouraged to locate where there is a stated need for a doctor and where the county medical society will co-operate from the start.

Iowa has many religious communities, and it

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Presented at the North Central Medical Conference, St. Paul, Minnesota, November 11, 1945.

LUMBAR SYMPATHETIC BLOCK AND THAT POSTPHLEBITIC LEG

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THE word "phlebitis" means an inflammation of the vein. This should always be regarded as of serious import. Even though the great majority of attacks of it are of little consequence and clear up spontaneously, we never know just what will happen in an individual case. Phlebitis is one of the most common complications of all types of surgery. It has perhaps most often been seen in the postpartum case, although the surgeon must expect and fear its onset in every case. Most often it involves the deep veins in the lower leg and it is this particular involvement that I wish to discuss here.

The usual history of the onset of a phlebitis is one of surprise. A patient who has made a perfectly normal postpartum or postoperative progress may begin to run a fever of 99 to 100 degrees with no symptoms indicating the cause. Another patient may have a slight pain and tenderness through the calf noticed during the bath, while another patient may have a violent onset with a chill, fever and severe pain through the entire lower leg, followed by extreme swelling of the part even to the crest of the ilium. It is oftentimes difficult to recognize and may only be surmised from the unexplained fever. The Homans signs, with pain in the calf when the muscles are put on tension and tenderness on deep pressure through the calf, are usually positive. The violent case with a typical onset and the secondary findings cannot be missed.

Pathology.—The primary pathology here is one of damage of some type to the intima of the vein wall. This may be due to trauma, infection, or chemicals. This in the presence of a slowed blood stream as we have when a patient is quiet in bed after delivery or after an operation, or with an altered state of the blood constituents, is all that is needed to start the deposit of the blood platelets and the formation of a thrombus. If the process is mild and the injury is very slight, we may have the condition commonly spoken of a phlebothrombosis. In this case the vein is simply filled with a thrombus which is but little more than a simple red thrombus or blood clot similar to the postmortem clot. It is not fixed to the wall of the vein firmly, but on the contrary lies there filling the vein and ready to float onward and upward with the blood stream with the first sudden stimulation of the venous current, as with massage or with active muscular action. This is the thrombus to be most feared. It often produces no symptoms and is the most common source of an embolus. But it is not with this silent phlebothrombosis that we are most concerned in this presentation. It is rather with the severe deep thrombophlebitis with the thrombus firmly fixed to the wall of the vein and which causes the train of symptoms and complications that may last for life that we are particularly interested in at this time.

By their experimental work, Ochsner and DeBakey have shown that the onset of a severe thrombophlebitis causes an overstimulation of the sympathetic ganglia along the lumbar spine with a secondary and resultant spasmodic contraction of the arterioles throughout the extremity. This in turn causes a stasis of the circulation, stagnation of the lymphatic circulation and venous congestion. The leg becomes swollen, mottled and at times almost white. At other times it is cyanotic. This depends on the difference in the degree of the lymphatic or venous stasis predominating. The condition is usually painful and the entire leg is sore and tender. At times the patient complains of even slight jarring of the extremity.

Prognosis.—If no active treatment is given the course of events usually becomes no less than tragic. Too often the doctor has merely commented, "This is just too bad, but we will have to make the best of it." He would tell the patient, "You have a serious complication and will have to rest in bed until nature has repaired the damage." This would often mean weeks and months of bed rest and invalidism, with the ever-present chronically swollen extremity and the cold, clammy, cyanotic lower leg and foot. The later complications of pruritis, eczemas, varicose veins, ulcerations, dermatitis and fungus infections about the lower leg and foot effectively cripple the patient both mentally and physically, and it is these conditions that I wish to discuss.

Presented before the Minneapolis Surgical Society, October 4, 1945.

All the above complications develop on a "stasis basis." Therefore, it is logical that we should approach their treatment in just the reverse order. Rather than treat the skin condition present first, let us attempt to correct the circulation and get more fresh arterial blood to the part with food for the tissues, and get rid of the edema, congestion and stasis with their associated accumulation of plasma proteins and products of tissue damage. It is these that cause the permanent fibrosis in the fascia, which when well developed remains there for life.

If Ochsner and DeBakey were right in their conclusion as to the overstimulation of the sympathetic ganglia as the cause of arteriole spasm, then they were right also with their theory of correcting the spasm by the injection of novocaine to put them out of function. This they did with their "lumbar sympathetic block." They found that by injecting 10 c.c. of one per cent novocaine solution along the area of each of the upper lumbar ganglia, the spasm of the arterioles was relieved and the arteries would again open widely and even more than the normal amount of fresh blood would flow to the part. This would wash on through the tissues and tend to clear them of the stagnation products. In this way, the circulation would gradually return to normal with a healing of the eczemas, ulcerations and fungus infections that had resisted all previous efforts. In many cases the normal state of vitality can never be regained and the complications will tend to recur, but it is the healing of the condition present that we are hoping for and we can then try to prevent a future recurrence. All the usual, accepted treatments for these complications should be used at the same time. The lumbar sympathetic block is merely an additional trump card in our pack of tricks to cure some of the most distressing and annoying end results of an old thrombophlebitis of years before. If the block is used at the onset of the phlebitis, all this chain of events can be prevented and the patient's leg returned to normal, in the great majority of cases in the course of a few days' time.

Case 1.—Mrs. H. B., housewife, thirty-six years old, was seen in May, 1936, with a history of having had a "broken vein" after confinement fifteen years previously, when she had been in bed for several weeks. Both lower legs have swelled much ever since. Examination showed the patient with both lower legs badly swollen, edema grade two, the right worse than the left, and a few scattered veins, size two, over the lower leg. The patient was seen again in May, 1936, with an acute eczema over the right lower leg and foot. Much edema was still present. In June, 1940, the patient was again seen, with extensive eczema about the lower leg and foot, with a severe fungus infection and typical fungus odor. Edema was present in spite of a supportive bandage. The patient was sent to the hospital in August, 1942, for the same condition. In December, 1943, the patient had a repetition of the skin condition with poor response to treatment. At this time I did a lumbar sympathetic block with a very fine immediate response and rapid healing of the skin and dermatitis. When seen in June, 1945, the patient had been well, had used a supportive bandage during the past year, but now has edema grade two without the bandage. The dermatitis had remained controlled.

Case 2.—J. P., a laborer, aged thirty-four, was seen in May, 1942, with a history of a bad thrombophlebitis in the left leg, following a pneumonia in 1933. He had been in bed for three months. The lower leg had been swelled ever since. Ulcers had first appeared in 1937. An open ulcer was now present over the external surface of the lower third of the leg which had been open for the past seven months. There was an extensive eczema and dermatitis over the left lower leg. The patient received some help from a varicose vein ligation and supportive bandage. In 1943 the condition was worse than ever. The feet were cold and clammy and there was a typical severe fungus infection about the ankle and foot. He received much help from a lumbar block, and the skin cleared up more rapidly than before. In April, 1943, Dr. S. Maxeiner and I did a lumbar sympathectomy, removing the upper four lumbar sympathetic ganglia on the left side. There was a marked improvement in the condition immediately. The skin became dry and warm, the eczema cleared entirely, and the edema practically disappeared. In September, 1945, the patient had two slight recurrences of the ulceration on the lower leg following trauma but each of these healed well with support. The patient now has little or no edema when wearing the supportive bandage.

Case 3.—J. E. S., a grocer, aged forty-five, was seen in July, 1944, with the history of having had varicose veins since the first world war. He had had ulcers on the inner and external surfaces of both ankles for the past six years. When seen at that time he had an ulcerating eczema with a fungus infection about both ankles and feet giving a typical fungus odor. The feet were cold and clammy and there were extensive varicose veins of both legs, involving both the short saphenous groups and the left great saphenous group. There was edema, grade two, of both lower legs and feet. I did a ligation of the left great saphenous and both short saphenous veins, with much relief. The patient continued to have recurrent attacks of the dermatitis about both the ankles, not severe, however. When seen in April, 1945, the edema was still grade one, with dermatitis and superficial ulcerations about both ankles, even if the patient wore a tight supportive bandage. I did a lumbar sympathetic block on the left side and later on the right side. This was repeated ten days later. When seen in September, 1945, the edema was almost gone and the patient wore bandages only half of the day. The skin condition was entirely healed and the skin was dry and warm. I advised him that if he should have any recurrence, he should have a lumbar sympathectomy.

Case 4.—A. P., a mechanic, fifty-seven years old, was seen in December, 1942. He gave a history of trouble in the right leg for thirty-three years, beginning with a bruise, and followed by milk leg which had been present ever since. The patient had had recurrent attacks for the past fifteen years and the leg had been swollen continuously for the past five years and is now very painful. Examination showed the right lower thigh about four inches larger than the left and the right lower leg at the mid-third three and one half inches larger than the left. There was a very extensive necrotic ulceration over almost all of the lower half of the left lower leg anteriorly and a weeping eczema about the ankle which was very painful. The great saphenous vein was size three in the groin and size two in the thigh and there was much cellulitis of the tissues of the lower leg. The patient was put in the hospital and hot packs were applied. Later 200 Braun seed grafts were implanted into the ulcer area and later a saphenofemoral ligation was done. In February, 1944, I did a lumbar sympathetic block. Today the patient has but little edema which is well controlled with the bandage. The ulcers are healed, and the skin is dry and warm. The patient will always have to wear some type of support part of the time.

In conclusion, I would emphasize that the lumbar sympathetic block is of much more value and importance in the treatment of thrombo-phlebitis than has been commonly recognized by the profession. The results following its use in the acute case are often miraculous. We now find that the chronic case with semi-invalidism of years' duration due to the edema of the lower leg with the complicating dermatitis, stasis eczemas, and ulcerations can be helped a great deal by its use. It should be employed in every such case.

RELOCATION OF PHYSICIANS IN IOWA

(Continued from Page 42)

is wise to bear that fact in mind when advising a young doctor. If he is a Lutheran, he may be happier in a location in which the majority of the people are Lutherans. We had an instance this week in which a young man was definitely attracted to a certain opening, but it was a Catholic community and he was not a Catholic. He finally decided against it, and this was probably a wise decision.

In the final analysis, the doctor himself is the only one who can decide where he will locate. Probably the best service we can offer is talking to him. When we sit down and tell him all we know about each opening, bringing out the special features of each one, its background, the little personal things we may know about, then we have given him a yardstick by which he may measure it. We also feel it is important to direct him to a physician we think will take time to talk to him and go over the situation with him."

After we give him all of this information and background, he may go out, look over the place, and not like it at all. He may find an opening we didn't know existed, and we feel pretty futile. We really feel we have little concrete to offer. We have a list of about twenty towns, all but three or four under 1,000 in population.

The best we can do is give each man our personal attention, encourage him, and give him as complete a picture as we can. Possibly the many little things we mention help him set up certain criteria in his own mind which he may utilize in coming to a decision. Some of the younger men have no yardstick by which to measure a location, and maybe we help them attain it.

We're glad they are demobilized, and we hope they find a good location in Iowa. If we can get across to them the fact that they are wanted and that there is a place for them, maybe we are of some help.

MEDICAL EXPERIENCES AT DACHAU

MAJOR JACK A. KILLINS, MC, AUS
and
CAPTAIN JOSEPH L. POSCH, MC, AUS

THE German concentration camp operated by the SS troops at Dachau has received widespread publicity. Because of this general interest we have considered it worth while to record our medical observations made between May 3 and June 12, 1945, while we worked at Dachau with the 127th Evacuation Hospital. We have adhered closely to an objective recording of our own experience. The horrors of the camp with their social and political implications have been left to other better qualified writers. In limiting our discussion to the cases we have personally examined and cared for, we have made certain deficiencies inevitable. We were originally assigned as a surgical team. However, the influx of patients and the preponderance of medical cases soon required that we assume care of approximately half the patients with pulmonary tuberculosis as they were diagnosed and segregated. All known cases of typhus in males were sent to the 116th Evacuation Hospital where the care of selected cases was supervised by members of the U. S. Typhus Commission. Consequently, the amount of tuberculosis reported by us is disproportionately high, while the amount of typhus in the camp is in no way indicated by the few cases we saw and diagnosed after they had been admitted to our wards. Our surgical cases are fairly representative of the entire camp.

We examined and cared for 308 patients of the 2,268 admitted to the 127th Evacuation Hospital during its stay in Dachau. All patients were white; there were 10 females and 298 males. The nationalities represented and the number from each nation are indicated in the following list:

Polish	93	Rumanian	8
Russian	57	Dutch	6
Hungarian	30	Lithuanian	5
Italian	24	Austrian	3
Yugoslav	20	Spanish	2
Czechoslovakian	18	Greek	2
French	15	Estonian	1
German	11	Latvian	1
Belgian	8	Nationality unknown	2

The average age was 31.7 years. Our youngest patient was thirteen and the oldest was sixty-seven. Forty-seven of our patients were twenty or less, twenty-four were fifty or more.

In almost every case the patients were extremely thin and weak. They were tired, listless and disinterested in either their surroundings or in their recent liberation. As they were admitted, patients were bathed in soap and water and 2 per cent cresol solution, their scalps shaved, their bodies dusted with DDT powder, and they were taken through the x-ray department for radiographs of their chest. Many arrived on the wards completely exhausted. Their average weight on admission was 117 pounds; the lowest weight recorded for an adult was 86 pounds. A very few who had been imprisoned but a short time or who, because of their technical skills, had received extra rations, had weights approximating normal.

Ninety-nine patients suffered from one or more infections in the skin or subcutaneous tissues. These included acute abscesses, old incised or spontaneously draining infections which left indolent ulcers of months' duration, and deep-seated, poorly defined areas of inflammation in the subcutaneous tissues. Decubitus ulcers were common. The combination of extreme emaciation, weakness and unpadded wooden slabs for beds was so conducive to their development that it is only remarkable that there were not more such cases.

Twenty-seven wounds of external violence, including three compound and two simple fractures, occurred during the two weeks preceding our arrival at the camp. These patients were cared for initially at the prison camp hospital whose facilities were hopelessly inadequate. All the wounds were frankly suppurative when we saw them. Older wounds and injuries accounted for seven other cases. There were seven patients with osteomyelitis originally caused by some injury inflicted by the German SS troops or by an injury accidentally incurred in the prison compound.

Ten men had gangrene. In at least three cases the history clearly indicated the gangrene was a

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Major Killins has been relieved from active duty and has resumed his fellowship in surgery at the Mayo clinic, Rochester, Minnesota. Captain Posch formerly lived in Saint Paul, Minnesota.

complication of typhus fever. Two of these men had bilateral symmetrical gangrene of the feet. The third had a sharply defined gangrenous area in the left cheek extending completely through the buccal tissues into the mouth.

There were five amputations of the lower extremities which had been performed in the prison hospital. All were of the guillotine type. These patients were in relatively good general condition and their amputation stumps covered with granulations.

Nineteen patients suffered from scabies. Many of the scabetic burrows were secondarily infected. In all cases the scabetic infection was incidental to some other condition requiring hospitalization.

Eleven high fevers with headache and mental confusion among our patients were diagnosed as epidemic louse-borne typhus and transferred to the hospital designated for such cases. The diagnosis was subsequently confirmed by the appearance of a typical rash and the appearance of proteus agglutinins in the circulating blood.

Enteritis with diarrhea appeared in forty cases. The patients themselves ascribed this to the increased food intake since their liberation. The recent onset and the infrequency of pathogens in the stool cultures tends to confirm the observation of the patients. In one case, Shigella paradysenterii Type IV was cultured from the stool, and in another, Shigella ambigua was found. Following a paroxysm of coughing, one patient found an adult Ascaris lumbricoides in his sputum cup.

There were two cases of parotitis, both of which responded to penicillin and hot packs. Neither required surgical drainage.

Seven cases of bronchial pneumonia developed while under our care. None of these patients died.

We saw 115 patients in which the roentgenologist had made an unequivocal diagnosis of pulmonary tuberculosis. Seven more were observed in which the roentgenologist reported bronchopneumonic infiltration, suggestive but not typical of tuberculosis.

Acid-fast bacilli morphologically typical of mycobacterium tuberculosis were found in the sputum of thirty-nine patients. Since the laboratory facilities were strained, not all patients had sputum examinations and it was impossible to repeat the examination more than three times on any patient.

Forty-two patients with pulmonary tuberculosis had some additional unrelated condition such as a cutaneous ulcer, gangrene of an extremity or a wound of external violence.

Four tuberculous patients had draining sinuses in an extremity with marked lime salt absorption of the osseous structure distal to the sinus and a presumptive x-ray diagnosis of tuberculous osteomyelitis.

One of these patients, a nineteen-year-old Belgian with bilateral pulmonary tuberculosis and an x-ray diagnosis of tuberculous osteomyelitis of the left metatarsals, became irritable, apprehensive, frightened and hypertonic. His neck became rigid and bilateral ankle clonus was present. Spinal fluid examination revealed chlorides 595.7 mg. per cent, protein 135 mg. per cent, 95 white blood cells per cu. mm. (100 per cent lymphocytes), sugar 54.1 mg. per cent, colloidal gold 5555555531, Wassermann negative. Culture for routine organisms was negative. Examination of the centrifuged sediment was negative for acid-fast bacilli. A guinea pig was inoculated with the spinal fluid after three days of treatment but this report is not available. Treatment with fourteen daily intrathecal injections of 20,000 Oxford units of penicillin in 10 c.c. of physiological saline plus 20,000 Oxford units of penicillin intramuscularly every three hours was followed by a remission of all central nervous system symptoms and a return of the spinal fluid to normal.

The average hemoglobin recorded was 66 per cent (Tahlquist), a higher figure than we anticipated, considering the general debility of our patients.

The white blood counts recorded were not remarkable. The proportion of patients with more than 10,000 leukocytes per cu. mm. correspond closely to the proportion of patients with abscesses or other pyogenic infections. Only seven had leukocyte counts of less than 5,000 per cu. mm.

Cultures of the exudate from infected wounds and the material from abscesses revealed the following pathogenic organisms:

Streptococcus pyogenes hemolytic	18
Proteus species	10
Staphylococcus albus nonhemolytic	7
Diptheroids	5
Staphylococcus aureus hemolytic	4
Escherichia coli	3
Salmonella enteritidis	2
Staphylococcus aureus nonhemolytic	1
Aerobacter aerogenes	1
Corynebacterium	1

RECORD OF PATIENTS WHO DIED

Case No.	Age	Nationality	Time in Hospital	Remarks	Autopsy	Laboratory Findings
1	45	Hungarian	12 days	Abscess over rt. scapula I & D 1,000 c.c. pus, severe intractable diarrhea. Died 10 p.o. day. Generalized anasarca, acute embolic and glomerular nephritis. Cirrhosis of liver. Extensive ulceration transverse colon. Pulmonary tuberculosis.	Yes	Hb 56%, WBC 4,100, RBC 2,920,000, Plasma proteins 4.9, Hematocrit 28.5. Urine: alb two plus, pus cells 2 HPF, RBC 25 HPF, granular casts. Wound culture: Salmonella enteritidis. Stool culture: Negative.
2	40	French	12 days	Severe subcutaneous infection lt. lower leg incised prior to admission with necrosis of skin around incisions. Rt. empyema treated by multiple aspirations. Extensive bilateral caseous tuberculosis with cavitation, severe malnutrition.	Yes	Hb 65%, WBC 27,700. Plasma proteins 4.5. Hematocrit 27; Urine neg. Leg wound culture: Proteus spp., Strep nonhemolytic.
3	22	Russian	12 days	Gun shot wound left hand and left thigh. Three massive hemorrhages from lower bowel. Numerous sharply marginated ulcers in colon.	Yes	Hb 68%, WBC 7,150, RBC 3,420,000. Plasma proteins 4.8. Hematocrit 29.2. Bleeding time 2.5 min.; clotting time 4.5 min. Hand wound culture: E coli. Staph albus hemolytic. Strep. viridans.
4	50	Hungarian	18 days	Gun shot wound rt. knee compound comminuted fracture prox. end rt. tibia. Suppuration rt. knee joint and subcutaneous tissues of entire post aspect of rt. leg.	Yes	Hb 55%, WBC 5,800. Wound culture: proteus spp.
5	20	Yugoslav	19 days	Bilateral severe pulmonary tuberculosis. Left tuberculous empyema. Tuberculosis of liver and spleen. Severe malnutrition.	Yes	Urine neg. Sputum: numerous acid fast bacilli.
6	36	Polish	22 days	Pulmonary tuberculosis with cavitation, all lobes. Tuberculosis of liver and adrenals. Severe malnutrition.	Yes	Hb 55%, WBC 6.650. Urine alb. 2 plus. Sputum: pos. for acid fast bacilli.
7	45	Polish	22 days	Pulmonary tuberculosis with cavitation, all lobes. Tbc of liver, spleen and kidney. Severe malnutrition.	Yes	Hb 65%. WBC 3,200, RBC 4,390,000. Urine neg.
8	49	Polish	3 days	Severe malnutrition with edema and heart failure.	Yes	None.
9	41	Polish	6 hours	Left and right heart failure, edema, anasarca, exhaustion.	Yes	None.
10	29	Russian	2 days	Severe malnutrition. Left empyema.	No	None.
11	25	Belgian	2 days	Sucking gun shot wound left upper chest 3 weeks old. Malnutrition, exhaustion.	No	None.
12	42	Czech	3 days	Dry gangrene, left lower leg and inner thigh. Malnutrition.	No	None.
13	51	Polish	3 days	Large dirty ulcer in rt. floor of mouth. Decubitus ulcer over left trochanter, intractable diarrhea.	No	None.
14	21	Russian	23 days	Bilateral pulmonary tuberculosis. Malnutrition.	No	Hb 60%. WBC 10,800.
15	21	Russian	16 days	Rt. pulmonary tuberculosis. Extreme emaciation.	No	Sputum: pos. for acid fast bacilli. Hb 60%, WBC 3,200.
16	26	French	1 day	Bilateral pulmonary tuberculosis; bilateral tuberculous epididymitis. Extreme emaciation.	No	None.
17	53	Yugoslav	7 days	Bilateral pulmonary tuberculosis with pleural effusion.	No	Urine negative.
18	21	Russian	3 days	Severe emaciation. Exhaustion. Chest X-ray: Bronchopneumonic infiltration left base.	No	None.
19	38	Polish	18 hours	Enteritis 4 months. Severe terminal diarrhea.	No	None.
20	31	Hungarian	6 days	Intractable diarrhea. Severe emaciation and exhaustion.	No	None.
21	23	Czech	20 days	Rt. pulmonary tuberculosis. Large ulecration over rt. scapula. Extreme emaciation and weakness.	No	Hb 50%, WBC 13,000. Urine neg. Sputum pos. for acid fast bacilli. Hematocrit 27. Plasma proteins 8.2.
22	27	Russian	28 days	Bilateral pulmonary tuberculosis. Congestive heart failure.	No	Not available.
23	20	Russian	31 days	Infected gun shot wound lt. thigh. Left pulmonary tuberculosis. Severe malnutrition.	No	Hb 60%, WBC 6,900. Sputum pos. for acid fast bacilli.

Mixed infections were common. The two cases of Salmonella enteritidis abscess are of particular interest.

Treatment was directed toward an improvement in the patients' general condition by good nursing care and adequate diet with vitamin supplements. Plasma and whole blood were available and were extremely valuable in the initial phases of treatment. Penicillin was valuable in many of the infected wounds and subcutaneous infections. It was not a substitute for adequate surgical drainage.

Except for a few small plastic procedures performed late in our stay at Dachau, surgical activity was limited to the incision and drainage of infected wounds and abscesses and the application of appropriate plaster splints and casts.

The accompanying table presents the pertinent facts concerning the twenty-three patients who died after admission to our wards.

Comment

Newspaper accounts of sick, displaced persons imply that they can be dealt with en masse. This concept is erroneous. Proper medical care always resolves itself into the examination, diagnosis and care of the individual patient.

In time of war, with atrocities and acute epidemic diseases rampant, the importance of tuberculosis is sometimes overlooked. Its ravages will be felt long after more dramatic events and epidemics have been forgotten.

Summary

We have presented a résumé of our medical observations at the Dachau Concentration Camp. The simple recording of these facts does not portray the sufferings of the patients, nor the unbelievable horrors of the camp. The human values are apparent, however, even in this factual report.

NEBRASKA REPRESENTATIVE MILLER PRAISES WORK OF MEDICAL SERVICES

The following statement, given by the Honorable A. L. Miller of Nebraska in the House of Representatives, is reprinted from the November 23, 1945, Congressional Record:

"Mr. Speaker, the record of the medical men and the medical service in this war is outstanding. It has never been equalled by any Army in any war. There were over 570,000 wounded in World War II, of whom 360,000 were returned to some type of duty. There were some 25,000 or approximately 4 per cent who died of wounds.

"In World War II, only six men in each 10,000 died of disease each year. This is a lower death rate in disease than that of civilians in the same age group here in the United States; yet these men lived in every part of the world under adverse physical and sanitary conditions. In World War I, 165 in each 10,000 died each year of disease, and these men were serving only in the United States and in Europe; the death rate in the Union Army in the Civil War was 712 per 10,000.

"The death rate from pneumonia has been reduced from 24 per cent in World War I to six-tenths per cent in this war. The death rate for meningitis has been reduced to 4 per cent in this war as compared to 34 per cent in World War I.

"I am sure, Mr. Speaker, that the Congress and the country can look with considerable pride upon this fine record of the medical service. There is no record in civil life or elsewhere to compare with this, and certainly a good job has been done in preventive medicine, as well as in the treatment of disease."—*News Notes*, No. 34, Office of Surgeon General.

ARMY DISCHARGES

According to the office of the Surgeon General more than 15,000 physicians have been released from the Army since V-E Day. An additional 15,000 have been made eligible for discharge, which will make a total of two-thirds of the physicians in the Army on V-E Day. Over 3,500 dentists have likewise been discharged from the Army since V-E Day and another 5,000 have been declared eligible for discharge. This will constitute 55 per cent of the 15,000 dentists in the Army on V-E Day.

New requirements provide for discharge of physicians and dentists over the age of forty-eight or after the completion of forty-two months of service, except for certain specialists whose services are required for the care of sick and wounded in Army General Hospitals.

Some 22,000 Army nurses have been discharged to date of the 57,000 which represented the peak strength of the corps. Twenty-seven thousand had formerly been qualified to return to civilian life and new regulations add an additional estimated 12,500.

NOTES ON THE HISTORY OF MEDICINE IN HOUSTON COUNTY PRIOR TO 1900

By NORA H. GUTHREY†
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(Continued from the December issue)

George Nye was born at La Porte, Indiana, on March 12, 1845. The medical school from which he was graduated is not known, but it is recorded that beginning in 1868 he practiced medicine for many years and that he was a member of the National Eclectic Association. The first scene of his work as a physician was Papillion, Sarpy County, Nebraska, and it was there he met Rose L. Maryatt, a graduate of Milton College, Wisconsin, to whom he was married soon afterward.

In 1874 Dr. and Mrs. Nye moved from Nebraska to New Albin, Iowa; from there in 1877 to Riceford, Spring Grove Township, Houston County, Minnesota; and in 1879 to the flourishing village of Caledonia a few miles northeast. Of their four children only two, Jennie May, aged six years, and Charles Jesse, aged two years, were living in the early eighties when the family was still in Caledonia.

As has been stated, there were other physicians in the village at the time of Dr. Nye's residence, notably, Drs. McKenna, O'Connor, Dustin, G. L. Gates, probably Castle and Freeman, and others in overlapping periods of practice, the exact years of whose presence in the community have not been determined. It is remembered by senior residents that Dr. Nye had his office at the corner of Decorah and Main Streets.

By 1883 a Dr. George Nye, who held Minnesota state exemption certificate No. 420-3, was practicing medicine in Hubbard County. He died in Park Rapids on May 10, 1918.

John S. O'Connor was born on March 2, 1816, in the County of Cork, Ireland, as were the other members of the immediate family. Of his several brothers and sisters, one brother, William, also came to the United States.

After John S. O'Connor had received his early education in the schools of Ireland, he studied at the University of Edinburgh, Scotland, and was a university student in England. On coming to America he entered Rush Medical College, in Chicago, from which he was graduated with his degree of Doctor of Medicine in 1858. Immediately afterward he began a medical practice in Illinois that was interrupted about three years later, at the outbreak of the Civil War, when he entered into military service. For the next three years he was Surgeon, United States Army, First Section, Third Division, Cumberland United States Hospital, at Nashville, Tennessee, and he was with his regiment on the battlefield as well.

In 1866, well prepared by formal training and by both civilian practice and military medical and surgical experience to meet the exigencies of a heavy general practice in a pioneer region, Dr. O'Connor, a man of enterprise and energy, settled in Caledonia, to follow his profession and to open one of the first drug stores in Houston County. Like many another early physician, he had been educated in both pharmacy and medicine. The second drug store in the village was operated by C. P. Coe. It has been recalled of this period in Caledonia that on September 9, 1867, the village post office was empowered to issue money orders and that, a matter of record, Dr. O'Connor was the first person in the settlement, two months later, on November 9, to avail himself of that service. Caledonia, in the later sixties, had about 700 residents. There were many Germans, Norwegians, Irish, and other settlers, of English and Scotch descent, that had come in considerable numbers from New York and the New England States. With his fellow residents, among them a varying group of physicians, some of whom have been named in preceding sketches, Dr. O'Connor was influential in building up a thriving village in a rich farming community and with them he prospered, owning, in addition to his drug store, other property in the little town and also a number of farms near by. The coming of the narrow gauge railroad, in 1879, discussed earlier in this paper, brought the community new growth and stability.

John S. O'Connor was twice married. Of his first marriage, to Ann Starkey, a Canadian, there was one child, John O'Connor. After his wife's death, Dr. O'Connor was married on April 16, 1860, at Cresco, Iowa, to Julia Ann Farrell, who was born in Ireland on August 14, 1843. A trained nurse by profession, Mrs. O'Connor ably assisted her husband in caring for his patients. Of the second marriage there were ten children, most of whom lived into mature years: Mary O'Connor Everett, a teacher; Thomas, a teacher and owner of a newspaper; Jennie O'Connor Schellinger; William, an electrical engineer and contractor; Edward, an attorney and newspaper owner; Nellie O'Connor McQueen; Arthur, who was a senior at Rush Medical College at the time of his death in 1901; Christopher; Charles; and Fergus, a graduate of the Chicago Dental College in 1902 with the degree of Doctor of Dental Surgery.

Dr. John S. O'Connor died in Caledonia on October 11, 1880. For a considerable time after his death Mrs. O'Connor maintained the home in Caledonia and owned and managed the drug store. Long afterward, when the two-story building that had housed the store and the home of the family was being razed, a resident of the village who chanced to be walking near the site picked up a slip of paper that came fluttering down the sidewalk in the breeze; on it was printed, "Dr. J. S. O'Connor, Druggist and Surgeon, late of the U. S. Army."

A well-known member of his profession in the community and county, a Mason and a member of the Episcopal Church, Dr. O'Connor still lives in the memories of early residents of Caledonia, recalled for his forceful and interesting personality and for his professional service to the community. In the early years, when at seasons the roads were almost impassable, he traveled long distances on horseback, as did his colleagues, to see his patients in the outlying communities, conveying his drugs and instruments in leather saddlebags. Under more favorable conditions he used horses and buggy and then carried with him extensive professional equipment superior to the average of that day.

Among the pioneer physicians of his period Dr. O'Connor was unusual in that he had and used a gift of writing to record in many essays and articles, unpublished, his observations and experiences in a widespread and varied practice. Of his manuscripts many, in 1943, were in the possession of his son, Dr. Fergus O'Connor, of Chicago, the only member of the family then living.

Christen K. Onsgard, one of the eight children of Mr. and Mrs. Knute Onsgard, both of whom were natives of Hallingdal, Norway, and among the earliest settlers in Spring Grove Township, Houston County, was born at the farm home on April 10, 1863. He acquired his early education in the local public and parochial schools and in 1884 entered the Eclectic Medical Institute at Cincinnati, Ohio, from which he was graduated in 1887, in the same class with his brother, Lewis K. Onsgard. Returning to Minnesota, he was licensed to practice in the state, receiving certificate No. 1460 (E), and opened an office in Spring Grove. After five years, however, he moved to Halstad, Norman County, Minnesota, where he remained until 1899, when he returned to southern Minnesota to establish himself in Rushford, Fillmore County. In Rushford for nearly twenty-one years he was identified with the community as one of its most constructive citizens and an able and progressive physician. In 1920 he moved once more to Halstad, where he spent the remainder of his life, in active practice until failing health forced his retirement in 1929. He died in Halstad on October 21 of that year. A more detailed account of his life is included among notes on the lives of physicians who practiced in Fillmore County before 1900.

Lewis K. Onsgard was born on a farm in Spring Grove Township on January 1, 1866. His father and mother, Knute and Bergit Larson Onsgard, natives of Hallingdal, Norway, had come to Minnesota in the early fifties and were among the first settlers in Houston County. Mr. Onsgard was the finest type of pioneer—thrifty, honorable and hard working, an intelligent and useful citizen, active in community affairs. A loyal churchman, he helped to build the Lutheran Church of the settlement. It was characteristic of him that he wanted to give his children the best that lay within his ability and means. Mrs. Onsgard was an ideal wife, a woman of unusually kindly disposition, ambitious and capable, a good housewife and a devoted mother. One of her special pleasures in later life was to make an exquisitely knitted bedspread for each of her eight children, who were: Lewis K., Christen K., Kari (Mrs. Gullings), Guro (Mrs. Traaen), Bella (Mrs. Evenson), Maria (Mrs. Gunvaldson), Ingeborg (Mrs. Thore E. Jensen) and Martin.

Lewis K. Onsgard received his preliminary education at the public and parochial schools of Spring Grove, working at the same time on the home farm and preparing even then for his future profession. His brother-in-law, Dr. Thore E. Jensen, husband of Ingeborg Onsgard, encouraged him and Christen to study medicine and to enroll at the college from which Dr. Jensen had graduated ten years earlier, and accordingly, in 1884, the brothers entered the Eclectic Medical College of Cincinnati, Ohio, from which, on June 7, 1887, they received together their degrees of Doctor of Medicine. Although Dr. Lewis Onsgard stayed on at the college for three months to take postgraduate work in ophthalmology, otology, rhinology, and laryngology, he at once applied for his license to practice medicine in Minnesota and on

June 22, 1887, received certificate No. 1461 (E), which three days later he filed in Fillmore County, which was to be the scene of his first practice. In addition to being a physician he was, also, like many other medical practitioners of the period, a registered pharmacist.

On his return from Cincinnati Dr. Onsgard settled in Harmony, Fillmore County, as he had planned, a location with which he was satisfied and in which he was successful. That he did not stay there came about through coincidence. On May 20, 1889, he was married to Anna Laugen, of Houston, an American of Norwegian descent, who was born at Broadhead, Wisconsin. Through his wife he became acquainted in Houston and came to know especially well Dr. Henry P. Johnson of that village. When, in 1892, Dr. Johnson decided to follow his profession in the city of La Crosse, Wisconsin, he persuaded Dr. Onsgard to take over his practice in Houston. The move to Houston proved to be an advantageous and happy one and Dr. Onsgard remained in the village forty-six years, until his death. As was common among physicians in those years, he had his office in his home. That he was a successful physician who possessed the confidence and esteem of his patients and of the community is not surprising, for he was trustworthy and conscientious and used good judgment based on sound knowledge. Although naturally serious he had a keen sense of humor, a trait that was appreciated especially by young folk and children, many of whom he helped through the stress of illness or injury by his timely little jokes.

In addition to carrying on a large local practice, Dr. Onsgard served on the staff of the General Hospital of Winona, Minnesota, and often was called in consultation with physicians elsewhere. He was a charter and affiliate member of the Houston-Fillmore Medical Club; a member, and its treasurer, of the Houston-Fillmore County Medical Society; a member of the Minnesota Valley Medical Association, which in 1911 joined with the Southern Minnesota Medical Association; the Minnesota State Medical Association and the American Medical Association. In his township and county he held various offices in which he untiringly gave of his ability for the welfare and improvement of the community. For many years he was a member of the local board of health; was coroner two years, from 1893 to 1895; county physician; and secretary of the local United States pension board. He was interested in fraternal organizations and was a supporting member and regular attendant of the Lutheran Church.

Early in his career Dr. Onsgard was appointed local company surgeon for the Chicago, Milwaukee, St. Paul and Pacific Railroad Company, a capacity in which he served until his death, and he was a member of the Congress of Railroad Surgeons. His service as railroad surgeon was the occasion of an unpleasant incident, unique in his practice, in which, however, he was exonerated completely. A railroad employe whom he had treated for an injury of the neck alleged that the treatment had not been the proper one and brought suit against the road. When he lost the case, he sued Dr. Onsgard for damages. Eventually the case came before the Supreme Court of the state, where it was thrown out. A pleasant occasion was one on which, when he had taken a railroad employe to Rochester for treatment, he was entertained at the home of Dr. Charles H. Mayo; young Charles, so small, that he was in a high chair, was at the family table. The friendly, kindly atmosphere pleased Dr. Onsgard and on his return home he commented, "That is a real American family." It amused him in later years to recall that once when talking with the Mayo brothers he had told them that they would have to build an addition to their hospital. "Oh, no," they said, "we've got more patients now than we can take care of." Years afterward, at a meeting of the "four-county" medical society in Rushford, when the three men were reminded of the conversation, he was delighted when the brothers told him, "We had to build that addition after all."

Dr. Onsgard began his practice before the days of all-weather roads and powerful automobiles and his experiences were those of his fellow physicians throughout the region. In the first part of his medical career he kept five or six good driving horses in order to meet the demands of his practice, and when his own horses were weary from long hard trips he hired a team and driver from the livery stable. When automobiles appeared, he was one of the first to recognize their potential value to physicians and his Ford car was the first motor to be used in Houston, as his Snowmobile, for winter driving, was the first of its kind in the community. Perhaps his greatest general interest outside of his professional and civic work was to observe and to promote as much as possible the development of the highway system; and simultaneously with improvements in roads he followed with keen interest the steady improvement in automobiles. His immediate personal interest was in his farm, which always was managed efficiently. In his later years, one of his chief pleasures was to go for rides, in a comfortable automobile equipped with heater and radio, to the farm, and about the scenic countryside over which he had driven horses under all conditions of weather, in all seasons, day and night, when roads had been uncertain and often dangerous.

His friends and old-time patients tell of many of Dr. Onsgard's hazardous experiences in attempting to reach his patients. Two such occasions are noted here. In March, 1897, at a time when all the streams in the region were in flood, the doctor was called on a confinement case. As it happened, the patient had been moved to the home of friends who lived near the main traveled road so that she might be nearer medical aid, but the bridge on this road suddenly was washed out, leaving the house inaccessible except by boat. With two men at the oars Dr. Onsgard attempted the crossing. In the savage current the boat soon was out of control and rapidly was drifting close to the milldam. One of the oarsmen, in terror, threw off his coat and was about to plunge into the water to try to swim ashore and, with difficulty, was persuaded by Dr. Onsgard, who knew that no swimmer could live in that deadly flood, to take the oars again. After a desperate struggle they reached the bank and the doctor attended his patient. At a later period the occasion again was a confinement case, out on the South Ridge eighteen miles from Houston. It was winter, and when the driver and team called for Dr. Onsgard, a blizzard was raging, obscuring the houses on the opposite side of the street. They set out, nevertheless, and with great difficulty groped their way along the valley by following the fence posts and telephone poles. Finally, on the Ridge, they were about to give up in despair. The team was exhausted even though the two men had taken turns walking, and there was no sign of a road. At the moment when they had reached an abandoned cattle shed, where they would have taken poor refuge, they saw a light in the near distance. It proved to be in the home of a farmer, who hitched up his horses and took them to their destination, where they arrived just in time, for the patient was in convulsions. Always the physician, Dr. Onsgard forgot his fatigue and discomfort. The mother and the baby boy lived, to the lasting gratitude of the family.

Dr. Onsgard died in Houston on October 24, 1938, of arteriosclerosis. He was survived by one brother, Martin; one sister, Mrs. Thore E. (Ingeborg) Jensen, both of Spring Grove; by his wife and all of their five children: Orrin C., a dealer in Ford automobiles at Houston; Agnes, a teacher of piano, who had a studio in the family home at Houston; Laura, Mrs. Axel Hanson, of Albert Lea, a graduate of St. Olaf College and a former teacher in the Albert Lea High School; Ruth, Mrs. P. F. Johnson, of Houston, a graduate of a teachers' college and a former teacher in the Houston schools; and Dr. L. Kenneth Onsgard, of Houston, a graduate of St. Olaf College and of the Medical School of the University of Minnesota. Dr. L. Kenneth Onsgard, who joined Dr. Lewis K. Onsgard in practice in 1929, has his father's surgical instruments and his fine medical library.

It is not strange that Dr. Lewis K. Onsgard was valued, respected and loved by his fellow citizens and that he is held by them in honored memory. The words of one friend, typical of many, express their regard:

> Perhaps no person outside the immediate family of the late Dr. Onsgard knew him as intimately as I. Being that during a period of twenty-three years I was a practicing druggist, and he my outstanding patron, we have much in common.
>
> He had a wonderful personality—kind, agreeable, and considerate—unusually mild in temper, and not once did I see him lose it. I never had a better and truer friend nor could a near and friendly relative have shown more interest in my success than he. He was strictly honest, not now and then, but always. That he was a successful practitioner is common knowledge and upon that I need not dwell. I shall always remember him as one who made my life more easily lived and enjoyed. Long live his memory.

Harry S. Piggins, a graduate, in 1885, of Rush Medical College, was certificated in Houston County in that year, having received Minnesota state license No. 1036 (R) on April 17. Record exists that in 1909 he was practicing medicine in Milwaukee, Wisconsin. It is hoped that more can be learned about him. In Caledonia, where he was in practice for several years, he has been described as a small man, dignified, a competent "doctor."

John Edwin Pope was born at Carroll, New York, on February 16, 1836, and died at Caledonia, Houston County, on January 19, 1909. A nephew of Dr. Timothy Arnold Pope, who was one of the earliest physicians in the county, John E. Pope in the sixties studied medicine under his uncle's preceptorship and thereafter practiced in Caledonia.

On October 23, 1859, John Edwin Pope was married to Betsy M. Woodward. Of the two children of the marriage, Charles Lineas and Eva Luella, the daughter, Mrs. Eva L. Evans, of Minneapolis, survived in 1941. The following excerpt from her letter of October 14, 1941, gives the clearest available picture of Dr. Pope:

> . . . I remember so little of my father as a physician. I was a little girl at that time. I can just remember a few instances of his going to or coming from calls, . . . of his having a very serious illness and his never being able to carry on his practice after that. I have been told that he was considered a very good physician in the community where he practiced. He belonged to the Methodist Church and was willing and glad to help in every way he could.

Timothy Arnold Pope was born in Otsego County, New York, on November 24, 1819, son of Jedediah and Lucy Angel Pope. When a boy of fourteen years, he moved with his parents to Chautauqua, in Chautauqua County, New York, in the extreme southwestern corner of the state. Two of his brothers were Jedediah and Gershom. The names of the other children in the family have not been learned.

In 1849 Dr. Pope was graduated in medicine from Western Reserve College, at Cleveland, Ohio, and in the following year he was married to Mary Abigail Howe, of Mentor, Ohio. Dr. and Mrs. Pope had four children, Laura Cornelia, Lucy C., Leon Dudley and Lida Edna. In 1941 the nearest living relatives of this pioneer couple were a niece, Mrs. Laura Barker, of Caledonia, Minnesota, and a grandniece, mentioned previously, Mrs. Eva Luella Evans, of Minneapolis.

Dr. Pope practiced medicine in Chautauqua County until 1854, when he moved with his family, in the exodus of hardy pioneers from the northeastern states into the Middle West, and settled in Houston County, Minnesota. They first made their home at Pope's Prairie, south of Caledonia, which had been named for Dr. Pope's brother, Captain Gershom Pope, who had preceded him into the county by a few months. The second brother, Jedediah Pope, also came into the region with his family in 1854.

In the spring of 1856 Dr. Pope took claim in section 13 of Yucatan Township and in that year was instrumental in having a post office established in the settlement that first was called Utica and later Yucatan. As noted earlier, he served as the first postmaster in Yucatan, but his duties did not prevent him from continuing his medical practice, managing his farm and serving as the first town clerk, a capacity in which he functioned for several years. In 1860 and 1861 he taught school in Sheldon. A year or so later he returned briefly to Yucatan, sold his farm and moved to the village of Old Houston. During his practice in that community he served as county coroner, in 1863 and into 1864, and acted as instructor in medicine to his nephew, John Edwin Pope.

Contemporary with Dr. Timothy A. Pope in Houston must have been Dr. P. T. Bowen. And, as has been noted, there were at the same time in various parts of the county, to name only those physicians who arrived prior to 1860, Drs. G. J. Sheldon, Alexander Batcheller, J. W. Albee, J. M. Veiling (Velling?), H. T. Fox, Charles Jenks, H. B. Train, T. R. Humphrey and perhaps H. B. Laflin.

Dr. Pope, evidently a true pioneer, in the early eighties left Minnesota for Iowa and later went to North Dakota, where he remained. He died at Grand Forks, on December 14, 1893.

De Costa Rhines was born on January 18, 1858, at Jackson, Michigan, the son of George Washington Rhines and Julia Lincoln Rhines, both of whom were natives of New York State. George W. Rhines was of Pennsylvania Dutch stock, his wife of English descent. Mr. Rhines served throughout the Civil War and his son, who was a very small child in 1861, has said that he first saw his father when the soldier returned home after the war.

De Costa Rhines attended the grade schools at Jackson and in 1882 was graduated from the local high school. In the summer vacations of this period he worked on the home farm; in the winters of 1880 and 1881 he combined his regular school work with the study of medicine under Drs. Towne and

Anderson of Jackson, so that by 1882 he was well prepared to enter the Hahnemann Medical College of Chicago, from which in 1884 he took his degree of Doctor of Medicine. Dr. Rhines' first medical practice followed immediately at River Junction, Michigan, where he remained only a few months before moving to Houston, in Houston County, Minnesota, in which state on August 18, 1884, he was licensed to practice, receiving certificate No. 937 (H). Houston was the scene of his activities for fourteen years. Politically independent, he identified himself throughout his career with the advancement of professional and community interests. For several years he was a member of the village council, for one year its president, and he also served as local health officer. In the late eighties he took Dr. Cassius S. Cranson, who previously had been in Sheldon, into association with him for about a year. Among the other physicians in Houston during his residence were Drs. H. P. Johnson and L. D. Onsgard (succeeding Dr. Johnson).

In 1898 Dr. Rhines took a postgraduate course at the Eye, Ear, Nose and Throat College and Hospital of Chicago and in that year, also, attracted by excellent opportunity in the village of Caledonia, he bought the practice of Dr. W. W. Freeman, who was moving to Grand Meadow. By 1899 Dr. Rhines had entered into his new field and here, as in Houston, he was a progressive physician and a leading citizen until his retirement from active practice in November, 1941, and his removal at that time to Owatonna, in Steele County, to make his home.

In Caledonia, Dr. Rhines served as local health officer and at one time as health officer for the Township of Brownsville also. He was county coroner in 1905 and in 1917 and, at the time of his leaving Caledonia, he again had been coroner for several years. He was president of the village council for two years; a member of the school board and of the commercial club; and during World War I he was chairman of the second, third, fourth and fifth Liberty Loan committees. He long has been a member of the Caledonia Chapter of the Masonic Lodge and of the Winona Consistory.

When the Houston County Medical Society was founded, at about the turn of the century, Dr. Rhines was a charter member, and he worked with the organization as it successively merged with the medical societies of Fillmore, Olmsted and Dodge Counties to form a four-county organization. At a meeting in Rushford of the Houston-Fillmore County Medical Society, in which he served as a censor, it was his privilege to propose as an honorary member his valued friend, Dr. Henry C. Grover, of Rushford, a veteran practitioner who had been "like a father" to him for years. Dr. Rhines has maintained membership in the Minnesota State Medical Association and in the American Medical Association.

On March 15, 1883, De Costa Rhines was married to Addie M. Peterson, of Jackson County, Michigan; their companionship has been unbroken. They have two children: Ray N. Rhines, manager of the Mechanical Department of the Northwestern Newspaper Company at Billings, Montana, and Hazell, at home, an able teacher, a graduate of the Winona Normal School.

Dr. Rhines has been distinguished by sound judgment in business. It has been a matter of personal pride and satisfaction always to own his own home. He has disclaimed hobbies, and it is obvious that his constructive work as physician and citizen has been his recreation as well.

(To be continued in the February issue)

EDWIN J. SIMONS, M.D.

President, Minnesota State Medical Association

President's Letter

PERHAPS, the first thing to be done in a letter such as this is to express a deep appreciation of the honor of serving as President of your State Medical Association. Then, too, with any such position come responsibilities which might be colossal and fearsome were it not for a feeling that you have always co-operated so wholeheartedly with the Executive Secretary and the personnel of his office, with the Council, with the Committee on Public Policy and Legislation, and with the other officers of the Association. It is this ever-present, harmonious, co-operative spirit on the part of all the physicians of the state which has given strength to the organization.

Also, initially, it is only fitting and proper to pay tribute to my immediate predecessor and those before him, to the members of the Council, to the various committee members, and to your other officers and State Office incumbents. Devotion to the duties of their several offices, self-abnegation, and perpetuation of high professional principles, have characterized their tenure in office. Always, the motivating force behind judgments made and actions taken by them has been the welfare of the patient-public and the best interests of the medical profession as a whole.

Thus, then, at this juncture, there is a sense of sincere gratitude, a realization of the challenge ahead, an appreciation of the abilities of preceding and present officers, and a feeling of loss that the enjoyable ties and associations at Council meetings and in other spheres of activity will slowly dissolve.

It is apparent that readjustment to peace is to be as hazardous as were the dislocations incident to war. Even now, integration of returning military physicians with civilian practice is our major problem. Its proper solution, mindful of needs and merits of our returning colleagues, is vital to the continued lofty level of civilian practice. This program is being jointly arranged by the Executive Secretary of the Association and the Director of Postgraduate Medical Education at the University of Minnesota.

Beyond this immediately pressing matter, two other questions present a challenge. The first requires that the standard of medical care not only be maintained but elevated proportionately with the remarkable scientific progress in various medical fields. And the second demands that medical minds be attuned to socio-economic changes in such fashion that from medical ranks will come the answer to trends toward government-controlled medicine. Preserving free choice of physician, the patient-physician relationship, quality of medical care, and the other basic features of the American System of Medicine, should be the keystone in any proposed new plan.

Bearing in mind these objectives, at this time when inventories are customary in the industrial and commercial world, an inventory of our accomplishments to date is warranted. The health of the civilians of the United States has never been better than it has been through the war years and now. Furthermore, military casualties, mortality and morbidity were never lower in any previous war than in American forces in the war just over. Thus, both civilian and military physicians can feel proud of the accomplishment of American medicine to date. This, however, should not lull us into a sense of complacency, but should spur us on to higher goals, including greater human longevity, still lower mortality, and continued advancement in all phases of scientific medicine.

Similarly, with all the public and political interest in health insurance and various forms of government controlled medicine, the Minnesota State Medical Association is keeping apace with social and economic departures in its Prepaid Medical Care Plan. Combined with this, undoubtedly will be evolved measures by which adequate, good, medical care will continue to be available to all of the people of Minnesota at a cost which they or the taxpayers can afford to pay.

So, with our house in fair order at the moment, with the objectives of the future clearly before us, let us continue working together in the same effective manner which has given us reasonable success in the past.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

INCENTIVES IN PRIVATE PRACTICE AND STATE MEDICINE

LITTLE attention has been called to the fundamental differences in incentives under the systems of private medical practice and state medicine not only on the part of physicians but of patients.

In private practice the physician takes pride in his work. He strives to do his best in the making of a correct diagnosis and in prescribing the best possible treatment. Besides taking pride in his work, he knows that a medical practice is built up by the reference of new patients and by satisfied former patients. Satisfying patients is an art based on the rendering of thoughtful examination and prescribing. Some are lacking in the art to begin with and never acquire it. Some overdo the art and are weak in the application of scientific medicine. But, by and large, the physician has the incentive to give his best to his private patients. He charges what he believes his services are worth, and it is usually in line with that charged by his confreres. While he may adjust his charges one way or the other, depending on what he believes to be the financial status of the particular patient, his charges are as a whole rather uniform. He knows that overcharging will drive his patients away, whereas undercharging may give the impression of inferior service obtained.

The patient, on the other hand, seeks the services of a physician about whom he has heard a favorable report. And he seeks him generally because he is not well or at least thinks so. He is willing to part with a fee in order to obtain the advice he desires.

In state medicine, the physician's incentive is likely to be quite different, human nature being what it is. If he is paid a salary, he may still have the desire to retain that feeling of satisfaction from rendering his best, but his best is likely to sag if he sees little opportunity of obtaining advancement as a result of good work. If his financial compensation is not increased by the seeing of more patients, that incentive is gone. He will have little desire to accommodate patients as to time and place.

If the physician is compensated according to a fee schedule, the incentive will be present for unnecessary visits, and, if he collects for medicine prescribed, for useless medicine.

If, on the other hand, the patient is at liberty to visit a physician at any time of day or night at no cost to himself, he has no inhibitions on his demands for medical service, and the percentage of unjustified calls mount. Calls by neurotics would make practice unbearable. If the physician is paid under state medicine on a visit basis, there would be little incentive to discourage unnecessary visits.

Is it any wonder that in New Zealand where free physician service has been in existence in recent years and where any New Zealander may visit a physician as often as he likes and the doctor can collect a fee for each visit, that the cost has exceeded the calculated $5,000,000 a year by 50 per cent? This state of affairs is called racketeering. It is simply the inevitable result when people feel they can get something for nothing. Government leaders in New Zealand have reported that the present income taxes, which go as high as seven-eighths of all earnings, enable the Government to recover most of the money paid to such doctors. State medicine in New Zealand has proved expensive both from the government's and from the physician's standpoint. Consideration is being given to its termination. State medicine in the United States would result in the same experience.

THE PEPPER BILL AGAIN

THE Pepper Bill, as the Maternal and Child Welfare Act of 1945 is known, has been introduced in Congress and provides for complete medical nursing, hospital and dental care for maternity services and children up to the age of twenty-one, irrespective of ability to pay. The bill proposes to furnish this care essentially the way the EMIC program for GI wives and chillren has been carried out through state agencies. The bill provides for choice of physician, and the hysician may decline to care for the patient. Compensation would be according to a fee schedle or salary as determined in the states conerned. The cost will be met through federal taxtion.

According to the most recent publication *Briefs)* of the Maternity Center Association of New York, an organization devoted to promoting etter maternity care in the United States, the Medical Board of this organization, after due onsideration, has approved the Pepper Bill in rinciple and is making this opinion known to he Congressional committees concerned. They lo, however, make two important suggestions: (1) that the age limit be fourteen instead of wenty-one; and (2) that consideration be given o restricting the benefits of the services provided under the bill to those who cannot pay for adequate high quality care.

The Pepper Bill, as submitted to Congress, constitutes state medicine for obstetrics and pediatrics and for youth up to manhood and womanhood. The medical profession is opposed to the replacement of private practice including obstetrics and pediatrics by state medicine.

If the Pepper Bill is modified to apply to the medically indigent only, quite a different proposition is presented.

That a certain number of mothers and children lack medical and dental care is a fact. This is due to a variety of factors. Some cannot afford it. Others live in districts unable to support physicians and dentists. Some spend their income on less essential things. With some, the cost of catastrophic illness is entirely beyond their means without the aid of insurance. Hospital and medical prepayment insurance will do more and more as they expand to provide medical care for the low-income group and will lessen the number of families who could be classed as medically indigent.

No matter how much voluntary prepayment medical and hospital insurance expand, there will still be a medically indigent group. These are being provided for by numerous tax-supported and charity organizations, not to mention the free or reduced fee services rendered by physicians individually.

The actual need for greater assistance for this group is doubtless exaggerated by would-be reformers. Certainly, the need is not so great as to justify the entire socialization of obstetrics and pediatrics with the establishment of another bureau in Washington. Even if the Pepper Bill is modified to provide for the medically indigent alone, the question arises as to the use of federal funds for such a purpose. Meeting such a need by the local units of city, county and state is likely to be less expensive. After all, federal subsidies are raised by federal taxation and are not in the nature of a gift.

The care of mothers and children presents a strong emotional appeal. This does not mean that there should not be a realistic approach to the problem which is local and should be solved locally.

DR. SHOULDERS TO LEAD BATTLE OF FREEDOM

There is a splendid timeliness in election of Dr. Harrison H. Shoulders to presidency of the American Medical Association, for American medicine is facing the challenge of socialization, and Dr. Shoulders has been in the forefront of the fight against that hazardous challenge.

Leaders in the medical profession know the dangers invited by political control of medicine, however glibly its advocates dress it in words of innocence. As speaker of the AMA's house of delegates, and throughout his service in the Tennessee Medical Association, as member, secretary, and editor, Dr. Shoulders has led an uncompromising fight for the freedom of medicine from such political encumbrance, and he will bring to this new assignment the same unswerving defense of freedom's safeguard.

Dr. Shoulders will take office next year, but the fact doesn't abate the force of his immediate fight, and the American Medical Association's. They have mobilized for it; obviously are recruiting leadership of maximum stature, and command thereby the faith of the American public whose welfare is at stake. It is hardly likely that thinking American citizens will prefer political voices to authoritative, medical voices on a subject involving life and health. It is inconceivable that thinking citizens will permit subjection of MEDICINE to the principles of boondoggling, or assign it to the arrogant, untender mercies of bureaucracy.

Dr. Shoulders has earned the faith of his vast constituency, not only for professional skill, but for vision incorporating those standards and principles of medical freedom enabling American medicine to forge ahead in a field of science whose boundaries must remain beyond the reach of government dictation. As such a leader, his opinion will bear weight with the people. In this fight, his service again is to his country, no less than when he wore his country's uniform against another, external enemy.

The American Medical Association is to be congratulated for choice of such a leader; Dr. Shoulders for the opportunity conferred; the country for possession of such leaders for the defense of principle at home.—*Nashville Banner*, Dec. 6, 1945.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

NEW ERA IN VETERANS MEDICAL CARE SEEN

It is becoming increasingly apparent to politicians who would like to be on the receiving end of some pork-barrel doles relative to veterans hospital sites that times have changed and that the new Veterans Administration meant business when it announced a policy of situating veterans hospitals solely on the basis of what will best promote the health and rehabilitation of the veteran.

Both Major General Paul R. Hawley, Medical Director of the Veterans Administration, and his Chief, General Omar Bradley, are grimly insistent that areas that are medically strategic, not politically important, are to be selected.

In line with this policy, of the nineteen new hospitals providing for 11,100 beds to be available by June, 1946, thirteen are to be located near medical schools. This is intended to make available the part-time services of specialists where they will be most readily accessible—near teaching and more populous centers.

Minnesota Plans Shaping Up

A joint announcement last month by Dr. Harold S. Diehl, Dean of the Medical School of the University of Minnesota, and Mr. Carl D. Hibbard, regional Veterans Administrator, revealed a plan, one of the first of its kind in the country, under which University Hospital physicians will be sent to the Minneapolis Veterans Hospital. The revamping of the medical services there and the supplement of professional services to ease the physician shortage existing at the present time, will result in providing veteran-patients with medical care that will be on par with that offered in any private institution in the state.

In the deficiency appropriation bill before Congress, approved by the Senate last month, are included plans for a 200-bed veterans hospital in southern Minnesota, estimated to cost $2,655,701, to be used for tuberculosis treatment; and a similar sized hospital in Duluth, at an estimated cost of $2,497,751, for general medical and surgical treatment.

New Hospital Administrator Minnesota Man

Recently named administrative head of Veterans Administration hospitals for the entire country was Lt. Col. Harry E. Brown, who served for ten years prior to his being called to duty in January, 1942, as superintendent of Northwestern Hospital in Minneapolis. In addition to directing hospital planning and business administration, he will be in charge of selecting new hospital sites, acquisition of beds in civilian as well as Army and Navy hospitals and taking over Army and Navy hospitals declared surplus.

The majority of these institutions, as well as the new units being planned, are to be devoted largely to domicile the so-called "long stay" patients—the nervous and mental cases, the cardiac cases, the tuberculous and those requiring specialized services.

Outpatient Care a Local Problem

At the AMA House of Delegates session last month, Major General Hawley, speaking before the delegates, placed the responsibility for the development of a program for veteran outpatient service, satisfactory to physicians and the Veterans Administration, squarely up to the State Medical Societies.

Stressing the problem of outpatient care, Dr. Hawley stated that the Veterans Administration would like to have every physician in each community designated as a veterans physician. In this way, the veteran gets his medical care just as any other member of the community does—from a physician of his own choice, and not, as in the past, from one or two designated physicians in the community.

No set scale of fees is contemplated, Dr. Hawley said. The program is to be operated on the premise that these will vary with states and it will be the duty of the State Medical Societies to determine equitable fees in their respective states.

Welcome news to physicians is the promise that administrative work will be kept to a minimum by simplification of forms that have to be filled out. It is planned to assist the busy physician by staffing suboffices with clerical help to handle the bulk of their paper work.

At a meeting of the Council of the Minnesota State Medical Association on December 16, a committee was appointed to work with the Veterans Administration here to develop a plan for Minnesota that will meet with approval both of the Veterans Administration and the physicians in the State.

MINNESOTA CIVILIAN HOSPITAL FACILITIES UNDER SURVEY

Even as United States senators were readying themselves for passing, with relatively slight modifications, the original Hill-Burton Hospital Construction Bill, the governor-appointed members of Minnesota's Hospital Survey Committee were discussing ways and means to speed the state-wide survey that would make funds available for hospital construction here. The survey was directed into the capable hands of Dr. Viktor O. Wilson, Director of the Division of Child Hygiene of the State Health Department, under whose direction the Minnesota Hospital Licensing program has functioned remarkably well since its establishment by legislative act four years ago.

Supplementing the considerable data compiled on Minnesota hospitals under this program, are extensive statistics in the files of the executive office of the Minnesota State Medical Association as a result of on-the-ground surveys of health facility needs conducted by Minnesota physicians a year and a half ago.

Under the provisions of the Hill-Burton Bill, once the survey is completed, the state agency designated to handle the program would set up a plan for hospital construction designed to provide facilities on as wide a scale as possible. This plan would be submitted to the surgeon general for approval together with facts regarding financial sources available from state or local sources, which determines the extent of the federal grant.

To date some sixty communities are planning new hospitals or additions, involving an expenditure in excess of $40,000,000 for the next five years. Plans for these will go ahead even without federal aid. However, if the bill is passed, a large expansion to present plans is held likely.

Facts have come to light recently that certain ambitious public officials have grabbed at the chance to make headlines by importing, by invitation, personnel from the United States Public Health Service to conduct independent surveys of individual hospitals. This would certainly not appear to be in conformity with the bill which specifically provides for an over-all survey.

A PERSPECTIVE OF COMPULSORY HEALTH INSURANCE

President Truman's compulsory health insurance proposal fits perfectly with the social ideas of those who believe that government should undertake to protect all humanity against all the ills of existence at public expense. However, thoughtful people join the medical profession in viewing this whole idea of governmental supervision of medical care with a great deal of skepticism based on past performance in recent years of government intervention in many private fields. Indisputable evidence, demonstrated on many fronts, indicates that governmental bureaucracy tends to produce mediocre performance, and to discourage inventiveness and new ideas, all of which is inimical to scientific progress. American medicine, on the other hand, has achieved tremendously because every medical man is stimulated to do his very best by the prodding of his own conscience, by the constant competition within his own profession, by the knowledge that his earnings from his practice are not guaranteed by anybody and must be earned by his own initiative and skill.

While the matter of cost never seems to be given serious consideration in these days of billion dollar federal budgets, the fact remains, according to reliable medical statistics, that the President's proposed tax of four per cent on all incomes up to $3,600 a year to pay the cost of compulsory health insurance for everybody is in excess of what families are paying today for all they need of the very best medical care.

The matter could well resolve itself into less health at more cost if one is to judge by the results in nations where compulsory health insurance has existed for many years.

New Zealand Offers Typical Example

Take the case of New Zealand, where free medical service is provided for all its citizens. According to a report published in the *New York Times* for October 7, the increasing annual cost of medicine has been alarming the Health Department for the last three years. Because of widespread abuses, the government of New Zealand is seriously considering the discontinuance of the present plan whereby any New Zealander is permitted to consult any physician as frequently as he likes, and the doctor collects the fee for each visit from a government fund. Abuses cited include "overconsultation" and speedy examination of patients, some at a rate of twelve an hour.

New Zealand's experience would seem to indicate that when the so-called "financial barrier" between the patient and doctor is completely removed or reduced to negligibility, the patient will consult the doctor for the most trivial or imaginary complaints. As for the doctor, when the time spent in unnecessary medical work is added to the time spent in reporting services and claims for services to the central authorities, there is little time left for attendance upon the patients who really need extensive care and treatment.

Furthermore, during the period when a great many New Zealand doctors were still in the armed forces, payments to civilian physicians were fifty per cent higher than the five million dollars a year which the government calculated would cover the total annual peacetime cost of the program. It appears now that the government would like to place all physicians on the basis of a fixed annual salary or retaining fee.

Immediate Action Necessary

It seems safe to predict that the majority of the physicians returning from the service will join their colleagues on the civilian front to frown on President Truman's proposed plan because they have had enough government control for a while and want to be free to practice on their own. And what about veterans? Employed veterans with service-connected disabilities, who are already entitled to medical care, are certainly not going to look favorably on paying extra for help which they already rate.

This is no time to merely sit back with objections and rejections, however vociferously they are voiced. It is rather a time to mobilize all forces of organized medicine to speed the development of a specific national health program with emphasis upon the nationwide organization of locally administered prepayment medical plans sponsored by medical societies as approved at the House of Delegates of the American Medical Association last month.

The subcommittee of the Council on Medical Service and Public Relations appointed at that time to shape up a national plan should be expected to function without delay.

MEDICAL CONTINUATION COURSES

The University of Minnesota Center for Continuation Study has announced a series of courses for graduates of medicine whose plans for continuation education were interrupted by military service. The courses of study have been arranged for physicians who plan to accept an association with a specialist, obtain a residency, prepare for American Board examinations or return to practice.

Classes will be taught at the Center for Continuation Study, Medical School, University of Minnesota Hospitals, Minneapolis General Hospital, Ancker Hospital, Saint Paul, and affiliated teaching institutions.

Distinguished teachers from other medical centers will join the faculties of the Medical School, other University Departments and the Mayo Foundation to teach these courses, scheduled to begin January 4.

The following courses will be offered, with others to be announced later:

Continuation Course in Medicine—January 4 to March 30, 1946

Continuation Course in Basic Sciences—January 4 to March 30, 1946

Continuation Course in Otolaryngology—January 14 to 18, 1946

Continuation Course in Pathology of Diseases of the Skin—January 21 to February 20, 1946

Continuation Course in Hospital Administration—January 21 to 25, 1946

Continuation Course in Basic Sciences (concluded)—April 8 to June 29, 1946

Continuation Course in Surgery—April 8 to June 29, 1946

Anyone interested in securing further details may address correspondence to the Center for Continuation Study, University of Minnesota, Minneapolis 14, Minnesota.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. Dubois, M.D., Secretary
230 Lowry Medical Arts Building
Saint Paul, Minnesota

Minneapolis Woman Ordered to Serve Two-Year Sentence for Narcotic Law Violation

Re State of Minnesota vs. Florence B. Brooks

On November 7, 1945, the Hon. Paul S. Carroll, Judge of the District Court of Hennepin County, revoked a stay of sentence entered on December 14, 1944, and ordered Florence B. Brooks, thirty-eight years of age, 1819 Bryant Ave. No., Minneapolis, taken to the Women's Reformatory at Shakopee, to serve a sentence of two years. The defendant entered a plea of guilty in the District Court of Hennepin County on December 14, 1944, to an information charging her with the crime of illegally possessing narcotic drugs. She had been arrested on November 4, 1944, by agents of the Federal Bureau of Narcotics immediately after having left the office of a Minneapolis physician who had furnished her with sixty ¼-grain Morphine Sulfate hypodermic tablets and twenty-five ½-grain Morphine Sulfate hypodermic tablets.

At the time Judge Carroll stayed the execution of sentence, the Court ordered the defendant to take treatment for her drug addiction. The treatment lasted three days and the defendant soon reverted to the use of various derivatives of opium. Through the excellent work of Mr. Howard R. Hush, Chief Probation Officer of Hennepin County and Mrs. Elvera M. Springer, Probation Officer, Mrs. Brooks was brought before Judge Carroll for violating the conditions of her stay of sentence, with the result that on November 7, 1945, Judge Carroll made an order revoking the stay. The defendant has been taken to the Women's Reformatory where she is now serving her sentence.

Fake Doctor Sentenced for Hospital Robbery and Car Theft

Re: State of Minnesota vs. John R. Kahl
Re: United States of America vs. John R. Kahl

On September 18, 1945, John R. Kahl, twenty-five years of age, 1610 Roblyn Avenue, Saint Paul, Minnesota, was sentenced by the Hon. Robert V. Rensch, Judge of the District Court of Ramsey County, Minnesota, to a term of one to ten years at hard labor in the State Prison at Stillwater, Minnesota. Kahl had pleaded guilty on that date to an information charging him with the crime of grand larceny in the first degree, following the theft by Kahl of money and jewelry in excess of the value of $500 from physicians and surgeons at a Saint Paul Hospital.

On October 9, 1945, Kahl was brought back from the State Prison at Stillwater, and taken to the United States District Court in Minneapolis where he entered a plea of guilty to three indictments charging Kahl with unlawfully transporting, in interstate commerce, three stolen automobiles. On the first charge Kahl was sentenced by the Hon. Matthew M. Joyce to a term of five years in a prison to be designated by the Attorney General of the United States, the sentence to commence after Kahl has served his Stillwater Prison sentence. Judge Joyce also sentenced Kahl to a term of three years for the second case, this sentence to commence immediately on the termination of the five-year sentence also imposed by Judge Joyce. On the third charge, Judge Joyce suspended the imposition of sentence for three and one-half years, Kahl to be on probation following his release from Federal Prison.

Kahl has a long criminal record dating back to when he was ten years of age, at which time he was first arrested at Boone, Iowa, for theft from a doctor's office. In September, 1933, Kahl was sentenced to the Red Wing Training School for burglary committed in Saint Paul. In June, 1935, Kahl was again returned to Red Wing on a charge of burglary. In September, 1938, Kahl was indicted by a Federal Grand Jury in Saint Paul on two charges, the first one alleging that Kahl stole a letter from a United States mailbox and the second one charging Kahl with escaping from the Ramsey County Jail where he was held while awaiting action of the grand jury. Kahl was given a total sentence of six years by the Hon. Robert C. Bell, Judge of the United States District Court. Kahl was first taken to the Federal Reformatory at El Reno, Olahoma, but was transferred from Leavenworth to the Federal Prison at Sandstone, Minnesota, where he served until June 6, 1945. Following his release, Kahl obtained work as an orderly at a Minneapolis hospital. This undoubtedly gave him the background for his entry to the hospital in Saint Paul where he committed the theft that led to his ten-year Stillwater sentence. Kahl has no training or education in the field of medicine.

IT'S NOT A CONSPIRACY

The idea persists in the minds of a few irreconcilables in the medical profession that Blue Cross plans are engaged in a sinister plot to grab control of the profession. Some even believe that hospital administrators are using Blue Cross as a tool to gain this evil end themselves.

For example, a recent issue of the *Bulletin* of the Winnebago County (Illinois) Medical Society publishes this statement attributed to an insurance executive: "I have made a rather comprehensive study of the Blue Cross history in an attempt to ascertain their present and ultimate goal, and it has become quite obvious to me that they intend to dominate not only the field of hospital insurance but also the field of surgical and medical care eventually."

In the same article, the past president of a state medical society is quoted as saying: "As between domination by the federal government and domination by hospital administrators, I think I should prefer the former. Unless we are very careful indeed, we are apt to find hospitals dictating the practice of medicine."

Of course, no one can say what is in the mind and heart of every last hospital administrator and Blue Cross executive in the country, and it may be that there are a few whose ambitions soar unreasonably toward widening powers. But every informed person will recognize as fantastic the implication that there is any general plan or intention in this direction. Unfortunately, many doctors who read statements like these in their medical society bulletins are unable to distinguish between fact and fabrication; they have had neither the time nor the interest to know better. Instead, they accept this fiction as truth and pass it on, thus unwittingly contributing to the conflict and suspicion that still delay decisive action toward a national voluntary health plan.

Publication of this fairy tale is as harmful as it is irresponsible. It ought to be stopped.

—*Modern Hospital*, December, 1945

Minneapolis Surgical Society

Stated Meeting held October 4, 1945

The President, Robert F. McGandy, M.D., in the chair

EMBOLISM OF THE RIGHT FEMORAL ARTERY

Report of Case

H. E. HOFFERT, M.D.
Minneapolis, Minnesota

This report is that of a white man, sixty-five years of age, who has had a long cardiac history. As a youth he had had rheumatic fever which left him with a double mitral lesion and which caused him to limit his activity to some extent thereafter. Twenty years ago on the advice of his physician he had begun taking 1 grain of digitalis twice weekly, a practice which he followed continuously without further checkup. Two years ago he suffered what was assumed to be a mild cerebral accident from which his recovery was complete, without seeking medical advice. He has been aware of irregular heart action for the past ten or twelve years. During the past year he had been feeling unusually well and had been working daily as a salesman for a paper supply company.

His present complaint began on February 18, 1944. For a week preceding he had had an upper respiratory infection but arose on this date feeling very well. At 8:40 that morning while shaving, he became aware of a tingling sensation in his right foot which was followed shortly by a persistent agonizing pain in his foot and lower leg. He was unable to move the foot on the ankle and could not secure any relief by changes of position.

He was seen at 9:30 a.m. when examination revealed an irregular heart with a pulse deficit of 18, blood pressure 160/90. The right foot and distal half of the leg were blanched and cold. The dorsalis pedis, ankle and popliteal pulsations were absent and the femoral pulse diminished as compared with the opposite extremity.

A tentative diagnosis of embolism of the right femoral artery was made and arrangements for transportation to and admission in Asbury Hospital carried out. He was given morphine sulfate grain ¼ from which he secured only partial relief.

Upon his admission to the hospital it was noted that the initial pallor of the lower leg and foot was beginning to be replaced by cyanosis and the femoral pulsation was still less prominent.

Laboratory studies showed his hemoglobin to be 105 per cent, white blood count 12,500 and urinalysis negative. An electrocardiogram was interpreted as showing an auricular fibrillation, myocardial damage and coronary disease.

He was seen in consultation with Drs. A. E. Cardle and S. R. Maxeiner, and immediate surgery was advised.

Operation: 500 c.c. of citrated blood and 100 milligrams of heparin for intravenous administration were in readiness.

Under local infiltration anesthesia an incision 4 inches in length was made directly over and parallel with the proximal portion of the right femoral artery. The artery was exposed and mobilized. There was no visible or palpable evidence of pulsation. A small longitudinal incision was made in the vessel after two small rubber-covered clamps had been passed loosely on the artery above and below the site of incision. A size 12 French catheter attached to a 20 c.c. syringe was then passed gently into the artery, distal to the opening, and aspiration showed no evidence of occlusion below this point. The catheter was then passed proximally, aspirating and advancing it cautiously. On the third attempt an embolus 3.5 inches in length was withdrawn and its removal was immediately followed by a very forceful gush of blood, which was controlled by gentle pressure with the rubber-covered clamp. The incision in the artery was closed using interrupted sutures of fine silk, care being exercised to avoid penetration of the intima. The clamps on the vessel were removed and it began to pulsate actively. It was kept under observation for eight to ten minutes, and after no diminution in pulsation occurred, the wound was closed and a pressure dressing applied.

Postoperative medication consisted of morphine sulphate grain 1/6 as indicated for pain, papaverine grain ½ every four hours, and heparine 20 milligrams intravenously every four hours for forty-eight hours, which resulted in a venous clotting time of 9 minutes and 30 seconds at the end of 24 hours, and 20 minutes at the end of 48 hours. Dicumerol 300 milligrams was given orally on the first postoperative day and 200 milligrams on the second which resulted in a reduction of the prothrombin time to 20 per cent of normal on the third postoperative day. During the following seven days this reduction was maintained by the additional administration of 100 milligrams of dicumerol on two occasions, daily prothrombin determinations being done.

The postoperative course of this patient was entirely uneventful. Six hours after operation the extremity was warm, the cyanosis was clearing and the popliteal pulsation was full and strong. The dorsalis pedis and tibial pulsations were present twenty-four hours later. His wound healed primarily and he was discharged walking on the fifteenth postoperative day.

Since operation he has remained under the constant care of Doctor Cardle and has been carrying on his work as before.

On September 23, 1945, nineteen months after his embolectomy, this patient suffered another arterial occlusion in the right lower extremity. He did not report this incident until fifteen hours later and by that time the appearance of the leg was such and the condition of his heart so grave that attempted embolectomy was not deemed justifiable. He is at the present time in Asbury Hospital undergoing a tourniquet amputation of the right leg. His condition at the present time is rather poor.

Discussion

Dr. Daniel MacDonald: How soon after initial symptoms was the operation performed?

Dr. H. E. Hoffert: Symptoms started at 8:40 in the morning and the operation was begun at 2:40 in the afternoon.

Dr. McDonald: How long was dicumerol kept up?

Dr. Hoffert: He received 300 milligrams on the first day, 200 on the second, and the prothrombin time was reduced to 20 per cent of normal. Daily prothrombin time was never above 20 per cent of normal. Only 200 additional milligrams of dicumerol were given during the subsequent week. After that it was discontinued.

LUMBAR SYMPATHETIC BLOCK AND THAT POSTPHLEBITIC LEG

H. O. McPHEETERS, M.D.
Minneapolis, Minnesota

Doctor McPheeters presented a paper on "Lumbar Sympathetic Block and That Postphlebitic Leg."*

He discussed the theory and principle of the lumbar sympathetic block and how it should be of value as an additional therapeutic aid in the healing of the chronic trophic skin conditions that follow in the wake of the deep thrombophlebitis of the lower extremity.

The Ochsner method was advised and 1 per cent novocaine was the solution injected. It was not advised as a permanent cure, but only as a helpful adjunct in the healing of the otherwise intractable and chronic trophic state of the lower leg.

Four separate case reports were given, demonstrating the help and value of the lumbar sympathetic block for this condition.

Discussion

Dr. F. R. Hirshfield: Isn't there potential danger of an embolism there when you relax the vessels of the extremity by blocking?

Dr. McPheeters: Therapeutically yes, but as Doctor Hoffert suggested in his case, all cases should be given heparin followed by dicumerol to reduce prothrombin time to 20 per cent of normal. Therapeutically you are supposed to increase the possibility of embolism, but practically you do not. I merely mentioned the deep femoral ligation. This treatment of thrombophlebitis has spread throughout the country and I predict it will recede to the background in less than ten years.

Dr. Earl C. Henrikson: I wonder whether it would not be better to get the patients up the fourth or fifth day, even if signs of phlebitis are developing, since by so doing we are dilating the blood vessels and stimulating the circulation by physical exercise which is what we hope to do when we do a therapeutic block. I know that most surgeons have felt that the patient would have to stay in bed longer when developing a phlebitis rather than that they should get up earlier.

Dr. McPheeters: During my visit in Brooklyn last winter I heard prominent obstetricians say they got their postpartum patients up on the fifth day. Some surgeons urge their appendectomy patients to get up on the second day postoperative.

Patients sometimes have more chance of dying by lying in bed. Their chances are better by getting up. My routine is to apply hot wet packs at a temperature of 130 for four hours at a time. The patient then is up and walking about one-half hour followed by the application of the hot wet packs.

THE TREATMENT OF NEUROSURGICAL CASES IN AN OVERSEAS HOSPITAL

WALLACE P. RITCHIE, M.D.
Saint Paul, Minnesota

The treatment of cases in the Army given by any one doctor or group of doctors depends to a great extent, not only on the situation and type of hospital in which the doctor is located, but also on the tactical situation presenting itself.

It will be well, therefore, to briefly describe the locations in which the 26th General Hospital was situated. The two locations in which the 26th General Hospital found itself were very different, not only as to housing, equipment, and place, but also as to the tactical problems.

While in Africa, the hospital was set up during the last six weeks of the Tunisian Campaign, the Sicilian Campaign, and the early part of the Italian Campaign. At no time was the actual front less than 150 miles away and in only a few instances did cases arrive without primary treatment. The casualties for the most part were ground force troops. A policy of evacuation was such that patients were not held for more than thirty to sixty days.

The Italian setup was different in many ways. The situation was more stable. The hospital was one of six assigned to the 15th Air Force, which comprised from 90,000 to 120,000 personnel and was large enough so that patients would not have to be evacuated to make room for other patients. The number of casualties arriving at one time was never large, and as a general rule no patient suffered because of lack of time.

It was an ideal location, as not only were casualties treated primarily (although small in number), but definitive treatment could be carried out. Furthermore, all of the diseases and conditions usually arising in a community of over 100,000 were encountered.

The equipment furnished by the Army was entirely adequate. In the early stages an electro-surgical unit, brought over by the unit, was the only one functioning in Africa, but it was not long before others became available.

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*See page 43 for complete paper.

In Italy, we were furnished a quantity of fibrin foam and fibrin film.

Fibrin film was used in ten cases and the only observed results were not satisfactory. It had been advocated especially as a covering for dural defects. We used it only once for this purpose. The wound became infected. The film extruded and the patient developed a meningitis. In eight other instances it was used as a covering of a nerve and in one as protection of a tendon. The latter became infected. This was not the real reason for our discouragement in its use.

A patient, whose slide you observe, was shot in the upper arm by a rifle bullet, on October 2, 1944, suffering a complete section of the ulnar nerve. On October 23, 1944 (21 days later), the left ulnar nerve was sutured and a cuff of fibrin film placed around the nerve. On February 26, 1945 (125 days later) he returned for examination, and there was definite evidence of regeneration. There was, however, such a large mass of scar tissue beneath the operative scar that the wound was reopened and the scar removed from around the nerve. Shortly after this we received information that others had also noted the excess of scar tissue after the use of fibrin film.

Fibrin foam, however, lived up to its predictions, as being an ideal hemostatic. We used it in about fifteen instances and found it controlled bleeding well. In one instance it was packed in the lateral sinus. In another, it was packed into a rent in the dura in the region of the cribiform plate, as exposure was inadequate for suture. Cerebral spinal fluid leakage immediately ceased and no rhinorrhea developed. Lyle Hay controlled severe bleeding from an ulcerated rectal mucosa by packing the foam against the bleeding area. Its use for controlling liver and kidney hemorrhage is easily visualized.

The penicillin supply was adequate and was used to advantage in abscess cavities and in three of our patients who developed meningitis. Penicillin used in strength of 1,000 units per c.c. 10,000 units every six hours (sixteen times in one, ten times in another, and seventeen times in the third), undoubtedly aided in recovery. In one instance meningitis developed in spite of the use of intramuscular penicillin for six days prior to the onset of his illness.

Wounds of the Head

The principles laid down by Cushing, in 1917, of thorough debridement of penetrating wounds of the brain, was the foundation of the treatment of this type of wound.

Peter Ascroft, of the British Forces, was the first person to have a wide experience in this type of surgery, and his early reports aided the Americans in establishing their policies. At the very outset it was found that an early inadequate debridement was not as valuable a late adequate procedure, although the best results were obtained by an early operation. A delay of even seventy-two hours was deemed advisable if facilities in the form of equipment and personnel were not adequate before that time. With our system of Auxiliary Surgical teams and well staffed evacuation hospitals close to the point of injury, such a lapse of time was rarely necessary. In the particular instance of our hospital, the interval between time of injury and operation was on an average eight hours.

The cases of penetrating wounds we received were the ideal type to handle, as they occurred in men who were relatively clean to begin with and they were flown directly to a field only twenty minutes from our hospital.

The procedure in handling a penetrating wound of the brain was as follows: As soon as admitted, the patient was examined for shock and hemorrhage. If he was in good condition, he was taken to the x-ray room where x-rays were taken. Stereoscopic films are a valuable aid in locating bone chips. The patient was then as a rule placed in bed where he was given a chance to stabilize himself from the physical and mental excitement of the last few hours. At the outset we felt it important to rush the patient to the operating room but in only exceptional instances, when hemorrhage is uncontrolled, is this necessary.

After this stabilizing period of a few hours has passed the patient is taken to the operating room.

The choice of anesthesia is variable among the surgeons. Local anesthesia, except in the deeply comatose patient or the extremely co-operative patient, was never very satisfactory in my hands. We frequently used pentothal but in several instances were disturbed by severe laryngeal spasm, which required redraping. As a general rule, we used intratracheal anesthesia in all but the most simple procedures.

The wound edges were excised, a fundamental principle in the treatment of all war wounds. A thorough debridement of all the missile tract was then carried out. In our cases craniotomy was never necessary. Adequate exposure of the brain tract could be obtained through enlarging slightly the entrance defect. It was seldom necessary to enlarge the defect already present in the dura. The most important step was the removal of all bone fragments. Aschcroft demonstrated at an early stage that retained bone was the chief factor in the formation of abscesses, while retained metal fragments had little influence on the development of abscesses. This is done gently with the sucker. Occasionally a large fragment of bone plugs the missile tract, and after its removal necrotic brain, blood clots and small bone chips will gush forth. It is well to count the bone chips when removed, to check with the number seen at x-ray. The tract is cleaned down to the deepest bone fragment. As a rule, the metallic body is deeper. It is a question whether further debridement beneath the last bone fragment is necessary.

The ideal is closure of all layers. Frequently the dura cannot be closed. If closure is impossible, a free or a flap graft of the aponeurosis aponeurotica is the ideal. The exposure is seldom large enough to use the outer layer of the dura. Leonard Titrud used it to good advantage in one instance in which a craniotomy had been performed. Preserved and fresh fascia lata grafts have been used. The frontalis muscle was used frequently in frontal tears, where it is extremely difficult to suture the dura, particularly on the inferior surface of the frontal lobe.

As a rule the scalp could be closed, although relaxing incisions and flaps were occasionally used.

The postoperative care of these patients presents nothing of special interest. As examples of penetrating wounds, I present two cases with slides.

Case 1.—This boy, W. I. A., was hit at 1230 hours by flak which entered the left parietal region and came to rest in the right temporal region. He was admitted to the hospital four hours later, at which time he was deeply comatose. Three hours after admission (seven hours after injury), the tract was debrided and the foreign body removed as you will note in the slide. Then he regained consciousness, he had light perception in the right eye, but no vision in the left eye. Five weeks later (after having meningitis), his vision gradually returned.

Case 2.—This case represents an important point, namely, that all penetrating wounds should be explored regardless how small they are. He was hit by flak at 1300 hours. He was knocked down and thought he was unconscious for a few seconds. He was rather drowsy when observed at a station hospital. Because the wounds seemed so small, they were cleaned superficially. Ten days later he was admitted to our hospital complaining of headaches, and with a choked disc. The point of entrance in the bone was only a few millimeters in diameter, but the defect in the dura was 2 cm. in diameter. As soon as the dura was retracted, about 10 c.c. of blood and necrotic brain gushed forth. The tract was gently debrided to a depth of four centimeters, and the wound closed. His recovery was uneventful and he was later returned to full duty.

There were all gradations of severity between these two types. Those treating ground force troops observed more severe wounds than were observed in the air force.

The early complications arising from penetrating wounds were herniation of the brain with resulting cerebral fungus, abscess, meningitis, rhinorrhea, and otorrhea. Fortunately, we had little experience with these sequlae, mainly due to the fact that our series was small. In thirty-two cases of penetrating wounds observed in Africa, three developed brain abscesses. In thirty-one cases of penetrating wounds in Italy, three developed meningitis and one a brain fungus. Only one of these seven died, a patient with a brain abscess.

A brain abscess developing from such a wound is different from those that develop from otologic or sinus infections, mainly in that there is an open tract already outside. As a rule, opening the dura and tract with subsequent washing of the abscess cavity with penicillin will effect a cure. Two of the three abscesses observed in Africa were enucleated in toto, one by Titrud and one by French. The other patient died twenty-two days after injury, after aspiration of the abscess and debridement of the fungus.

I do not have the statistics for the development of brain abscesses, but I do know that their incidence decreased a great deal as time progressed. The results of our two cases were excellent with their removal in toto, but good results were reported by aspiration and tube drainage of the abscess cavity with instillation of penicillin.

The development of a cerebral fungus was a dangerous complication. They were of two kinds, acute and chronic. The acute were usually due to an early edema, and receded without specific treatment. The chronic were more difficult to care for, but were usually due to some disturbance deeper within the brain substance such as an abscess around bone fragments or a hemorrhage. They would not disappear until the underlying disease had been eradicated. Fortunately, we had only two cases in our group. One died with an underlying abscess and the other receded by itself.

The low incidence of meningitis, three in sixty-five cases of penetrating wounds, was no doubt due to early debridement. Two of these were due to other factors, infected fibrin film and faulty technique in one, and cerebrospinal fluid drainage in the other. The third was due to a delay in debridement, seven days after wounding. It is interesting to note that all three individuals developed meningitis in spite of their having had adequate doses of penicillin. As has been stated, they were all treated with intrathecal penicillin and two recovered. The cause of their meningitis was eradicated at the same time, but it was our impression that penicillin did aid in their recovery.

Only one case of persistent rhinorrhea was observed. This was surprising, as there were many frontal depressed fractures caused by crash landings, in which the dura in the region of the crista galli was torn. In several instances fibrin foam was packed into the region. Flaps of frontalis muscle were particularly helpful in closure of these wounds. In the one persistent case, a fascial graft was used for covering the defect.

It was surprising to us that intracranial hemorrhage did not play a greater role in penetrating wounds. Shoreston stated that there were only eighty-three cases in 2,000 in which an intracranial hemorrhage played an important role. It was interesting to note in cases in which the missile passed through the brain hitting the skull on the opposite side, that the hemorrhage was frequently on that side, namely, the side opposite the entrance. The repair of cranial defects was not, as a rule, a procedure for overseas installations. However, it was found advisable to perform cranioplasties in several instances. Tantalum was not available. Free bone grafts were used from the ileum or from the outer table of the skull, as demonstrated by the following slides.

Naturally, and particularly at the outset, the main interest was the penetrating wounds of the brain. We did have, however, many closed wounds of the head and depressed fractures which present no special featues.

Only three brain tumors were operated upon during our service. A large astrocytoma was partially removed in one instance. A cerebellar medulloblastoma was removed in another. The third case was a large ependymoma of the lateral ventricle.

As in all services, unusual cases present themselves. The following case was interesting:

A thirty-one-year-old soldier, with two and one-half years of service, had been well until November 1, 1942, when he developed a headache and blurring of his vision, after a severe sandstorm near Benghasi, Lybia. He soon recovered, but had intermittent headaches for the next eleven months. In December, 1943, he had chills and fever, and he was told that he had malaria. At this time his headaches became severe. On admission to our hospital, there was a two diopter choke of both discs. There was a slight right 6th crania nerve paresis.

X-ray examinations is as demonstrated on the slides. On January 19, a right transfrontal craniotomy was performed and a large cyst was demonstrated beneath and lateral to the optic chiasm. The cyst was evacuated and subsequent microscopic inspections revealed a cysticercus cellulosa. His post-operative course was uneventful. Nine months later he was reexamined and found to have performed full duty and had no complaints.

It is impossible to discuss the posttraumatic state here. Suffice it to say, it was a great problem and the will to return to duty was a great factor in the ultimate well-being of the patient.

I am unable to give the full statistics of our head injuries but I do have the data extending from January to October, 1944, ten of the seventeen months of activity. Of the twenty-seven patients with penetrating wounds, eight returned to duty, fourteen were returned to the U. S., and three died. Of eighteen patients with depressed fractures thirteen returned to duty, five were sent to the U. S., and none died. Of 137 patients with closed wounds 102 returned to duty, seventeen to the U. S., and five died.

Of 180 cases of all types, 68 per cent returned to duty, 28 per cent were sent to the U. S., and 4.5 per cent died.

The mortality of our penetrating wounds was approximately 19 per cent.

Nerve Injuries

At a neurosurgical conference in Florence, it was stated that the most pressing problem presenting itself to the conference was that of injuries to the peripheral nerves. May I present to you our experience with these injuries.

Both in Africa and in Italy we observed 445 patients with peripheral nerve injuries. One hundred and nineteen of these cases were operated upon, there being thirty-nine nerve sutures.

Factors which included difficulty in evacuation and satisfactory control of infection prompted an early repair of severed nerves.

Seventy-five per cent of the nerve lesions were in the upper extremities and the ulnar nerve was most frequently involved.

Penetrating wounds caused 79 per cent of the lesions.

Forty-three per cent were judged to be complete lesions at the time of the initial examination.

The average time of beginning recovery in the complete lesions not operated upon was thirty-four days. The ulnar and median nerve recovery was somewhat less than this period and the radial, femoral, and tibial was slightly more.

As time went on the flexible rule was that if recovery or improvement did not take place in four weeks in the ulnar, median, and musculocutaneous, six weeks in the radial and seven to eight weeks in the peroneal nerves, they should be explored provided, of course, the wounds were in a satisfactory state.

Incomplete lesions were explored if they showed no improvement on an average of forty-three days after injury.

Operations.—One-hundred and fourteen operations were performed of which thirty-nine were sutures, two autogenous nerve grafts, and seventy-three neurolyses. As a general rule, the gross reaction from the original injury had disappeared by four weeks. The scar present was firm and not edematous. Cultures were negative. Microscopically, there were a few giant cells and lymphocytes present but no evidence of acute infection.

There was one postoperative infection. Fibrin film was used in some instances as a cuff but was discontinued due to a very apparent increase in late postoperative reaction.

Early Results and Disposition of Cases.—None of the nerve sutures revealed any functional return prior to disposition from this hospital.

In a number of instances in which neurolysis was performed there was a rapid return of sensation and motor power. This was not always true as in two cases there was definite subjective and objective evidence of improvement in the first three or four days and then a return of the original condition with no further improvement at the time of discharge.

There were thirty-one cases of painful nerve lesions. Seven of these were sensory nerves. Fourteen of the twenty-four motor nerves involved were the sciatic or tibial or peroneal nerves. They all complained of severe pain in the foot, except one in whom there was a burning pain down the leg. This was the only one whose pain was relieved spontaneously (thirty-one days). In the lower extremity, the pain involved for the most part the plantar aspect of the foot. In the majority of cases, in which the nerve was demonstrated at operation, the nerve had been definitely struck by the missile.

The usual time interval for the onset of the pain was ten to fourteen days. Frequently as motor and sensory power increased, pain occurred. Sympathetic block gave the best relief in two brachial plexus injuries. One was permanently cured by novocain block alone and the other by sympathectomy.

Ten patients were relieved temporarily by sympathetic block. Two were not relieved.

Seventeen neurolyses were performed. All of them were relieved of their severe pain.

Late Results.—Follow-up records were obtained in 53 per cent of all the cases, operated and unoperated. Adequate follow-ups were received from twenty of 74 per cent of those operated upon. The follow-up interval ranged from six months to one and one-half years.

Summary

In six months five showed partial return; in one year ten more showed partial return. If there was no return in one year no improvement could be expected. It

(Continued on Page 72)

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SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 70)

did take one year before recovery took place in peroneal and radial nerve sutures. In fifty-two neurolyses, in six months, eighteen showed partial recovery and four no recovery. In one year twenty-eight more showed partial and two no recovery.

There was a definite relationship between preoperative interval and the number showing recovery in both nerve sutures and neurolyses. Ulnar and median nerves seem to recover fastest. Practically all patients in whom recovery took place experienced associated pains and hyperesthesias in the cutaneous nerve distribution. Paresthesia was not a prominent symptom.

Discussion

Dr. William Peyton: I congratulate Doctor Ritchie on this very excellent summary of his experiences in the war.

We have had a little fibrin foam for experimental purposes and found it most useful in controlling bleeding from the pituitary fossa after removal of pituitary adenomata. Fibrin foam and thrombin placed in the operative defect and left there completely controlled all oozing of blood which is so essential for uneventful recovery in these cases. I regret very much that we no longer have any fibrin foam available for this purpose.

The difficulty seems to be that in peacetime there is not a constant and sufficient amount of human blood being processed for the preparation of this product. Whether or not it will be available for general use is uncertain, but at present, prospects for its availability, do not appear to be very favorable.

In speaking of repair of skull defects, Doctor Ritchie said he had used a bone graft of the outer table of the skull instead of the more generally used tantalum, which was not available to him. The outer table of the skull makes a very satisfactory closure of small defects. The objection that has usually been made to the use of the outer table of the skull does not obtain with the technique employed by Dr. Ritchie. It has been the custom to remove these grafts with an osteotome and hammer. This procedure is traumatic to the intracranial contents and therefore objectionable. Doctor Ritchie showed in the illustrations (but he did not stress it) that he removed these grafts by sawing off the outer table with a Gigli saw, so that this objectionable trauma is entirely avoided.

Of course, tantalum can be used. It is certainly the best material for repair of large cranial defects. We have used it. The plate can be cut and properly shaped at the operating room table, unless the contour of the defect is complicated, as is the case where the superciliary arch is to be reconstructed.

Doctor Peyton then showed some lantern slides of some cases of head injury.

The first case was that of an aviator who, on February 25, 1944, had a large piece of flak enter his right temporal region. It passed to the left and slightly downward so that on reaching the midline it passed through the sphenoid sinus, entered and lodged in the left cavernous sinus where it injured the left internal carotid artery. A carotid-cavernous fistula was thus produced on the left side. On regaining consciousness, six days after the injury, he heard a swishing noise in his head and this remained until the day before he was seen by Doctor Peyton (July, 1945) when it suddenly stopped and he developed a very severe headache. This bruit had been noted by all previous medical examiners and a diagnosis of carotid-cavernous fistula made.

On examination there was exophthalmos of the left eye and a left sixth cranial nerve paresis. There were some enlarged veins in the left sclera and the retinal veins were engorged. Visual acuity was normal. No bruit was audible. He was seen again one week later when there still was no bruit and no symptoms except some diplopia due to the sixth nerve paresis.

It is obvious that the day before this man was seen, or seventeen months after his injury, a spontaneous occlusion of the fistula had occurred by clot formation or thrombosis. The patient was reassured that a spontaneous cure had now occurred.

The symptoms, physical findings and pathologic changes in carotid-cavernous fistula were then discussed. Its treatment by ligation of the internal carotid artery in the neck or by packing the internal carotid artery with muscle strips, or by ligating the internal carotid in the neck and occluding it above the cavernous sinus with silver clips was illustrated by cases briefly reported.

Dr. L. H. Fowler: I cannot add anything to the scientific discussion because Doctor Ritchie has covered the subject so thoroughly. I do want you to know, though, that I appreciate his efforts and his work. You can tell from his presentation the fine work he has done for three and one-half years as Chief of the Section on Neurosurgery of the 26th General Hospital. He was not only most skillful and tireless in his work, but one of the most popular—if not the most popular—men in the outfit, always on the job, always co-operative, always a gentleman and a scholar.

Capt. Nathan Plimpton, M.C.: I treated some cases of liver injuries with fibrin foam and saw several others that were treated in the same way. It not only controlled the hemorrhage very effectively, but we felt that it also sealed off the bile ductules as the bile drainage in these cases was considerably less than what we experienced before fibrin foam was available. There is no question but that this was the best method we had for handling war wounds of the liver.

Dr. William Peyton: There is a substance called gelatin sponge being made as a substitute for fibrin foam and bovine thrombin is suggested as a substitute for human thrombin. I do not know how satisfactory these will be.

Ernest R. Anderson, M.D.
Recorder

OFFICE OF THE SURGEON GENERAL REPRESENTED AT GORGAS INSTITUTE MEETING

Major General Norman T. Kirk, Surgeon General of the Army, and Brigadier General James S. Simmons, Chief of Preventive Medicine Service, Office of The Surgeon General, both board members of the Gorgas Memorial Institute of Tropical and Preventive Medicine, recently participated in an election of three new directors to the Institute.

The three included: Spruille Braden, former ambassador to Argentina and now Assistant Secretary of State, Rear Admiral H. W. Smith, Chief of the Navy Research Division of the Bureau of Medicine and Surgery, and Colonel R. G. Prentiss, Jr., Chairman of the Army Medical Research and Development Board.

GENERAL SIMMONS GUEST OF HONOR AT DINNER

Brigadier General James S. Simmons, Chief of Preventive Medicine Service, Office of The Surgeon General, was the guest of honor at a dinner recently given by Colonel Richard P. Strong, Director of Tropical Medicine of the Army Medical School. The guests included some of the nation's leading scientists and military doctors.

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In Memoriam

EARL MELVIN ANDERSON

Dr. Earl M. Anderson, Minneapolis, a Lieutenant in the Navy, died at the Naval Air Station in Glenview, Illinois, July 5, 1945, as a result of numerous injuries received in an airplane crash. He was twenty-eight years old.

Dr. Anderson graduated from the University of Minnesota Medical School in 1941 and interned at the Minneapolis General Hospital. He served a fellowship in surgery at the Mayo Foundation at Rochester, and was commissioned a Lieutenant (jg) in the medical corps of the U. S. Naval Reserve on March 3, 1942.

EDWARD THOMAS ANDERSON

Dr. Edward T. Anderson of Excelsior, Minnesota, passed away November 1, 1945, at the Veterans' Hospital in St. Cloud where he had been since 1939. He was seventy-six years old.

Dr. Anderson was born at Dubuque, Iowa, August 30, 1869. He graduated from the School of Medicine at Sioux City, Iowa, in 1895, and practiced in South Dakota before entering the service in World War I. He served three years, one of them overseas, and because of impaired health resulting from service, retired soon after his discharge and lived at Excelsior, Minnesota.

He was a member of the Excelsior Methodist Church and the Excelsior Masonic Lodge.

Dr. Anderson is survived by his wife, one daughter, Mrs. R. L. Ward of Staples, Minnesota, and one son, Dr. Arnold Anderson of Lexington, Kentucky.

FLOYD F. CLARK

Dr. Floyd F. Clark of Duluth, died suddenly November 15, 1945. He was born at Churubusco, Indiana, November 17, 1875, and obtained his medical degree at the University of Illinois in 1908. He interned at Chicago Hospital and began practice in Duluth thirty-six years ago.

Dr. Clark served as examiner for the State Boxing Commission for four years, was physician for the jail of St. Louis County for fourteen years and at times was deputy county coroner.

He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical associations, Tonic Lodge A.F. and A.M. and the Order of the Mystic Shrine.

Surviving are two sons: Lt. Floyd Clark, Jr., of the Navy and Fred Clark of Houston, Texas.

F. V. LANGENDERFER

Dr. Francis V. Langenderfer was born in Ohio, December 30, 1884. He graduated from Loyola University Medical College, Chicago, in 1907.

He was commissioned a Lieutenant in the Army Medical Corps and served three years in that capacity in the Philippine Islands.

Upon his return to the United States he started practicing medicine in Knapp, Wisconsin, where he also met and married Anna Kvool. He moved to Saint Paul in 1913, and opened an office at Rice Street and University Avenue. In 1923, he moved to new offices across the street in the New Capitol Drug Building, where he practiced medicine and surgery until he became ill in February, 1943.

He was a member of the Ramsey County Medical Society, Minnesota State Medical Association and American Medical Association, and was on the staff of St. Joseph's and Bethesda Hospitals.

Dr. Langenderfer died November 26 at St. Joseph's Hospital where he had been since October 7, 1944.

VICTOR N. PETERSON

Dr. V. N. Peterson died at Bethesda Hospital, Saint Paul, on November 28, 1945, after an illness of several months. Funeral services were held in Saint Paul on December 3. Interment was at Cokato, Minnesota. He is survived by his mother, Mrs. Anna Peterson of Mankato, Minnesota, and one brother, Mr. Leonard C. Peterson of Miami, Florida.

Dr. Peterson was well known in Saint Paul, having practiced there for thirty-eight years. He was located at 885 Rice Street for 11 years and in the Lowry Medical Arts Building since 1918.

He was born in Cokato, Minnesota, on September 5, 1879, and was the eldest son of Andrew P. Peterson and Anna Peterson. He attended the Cokato High School and in 1902 received his B.A. degree from Gustavus Adolphus College at St. Peter, Minnesota. In 1906, he was graduated from the University of Minnesota with the degree of doctor of medicine. After graduation, he practiced for one year at Starbuck, Minnesota, before coming to Saint Paul.

For a number of years he was on the staffs of Bethesda and Miller Hospitals. He was a member of the Ramsey County Medical Society, the Minnesota State Medical Association and the American Medical Association. In 1925 he was admitted as a Fellow of the American College of Surgeons. He was also a member of the Saint Paul Surgical Society and served as its president in 1939.

Dr. Peterson was a Shriner and an active member of the Osman Temple Shrine of Saint Paul. He was a member of the Saint Paul Athletic Club, where he made his residence after the death of his wife.

He will long be remembered by his many friends for his cheerful nature, his kindness and his sincerity. He was greatly esteemed by his associates for his excellent judgment and professional skill. He was always willing to be of help to the younger men, and his influence will ever be felt by those whom he so generously assisted.

At this time the members of the Ramsey County Medical Society wish to express their sorrow at his passing and their appreciation of having had the opportunity to be associated with one of such high character and outstanding ability.

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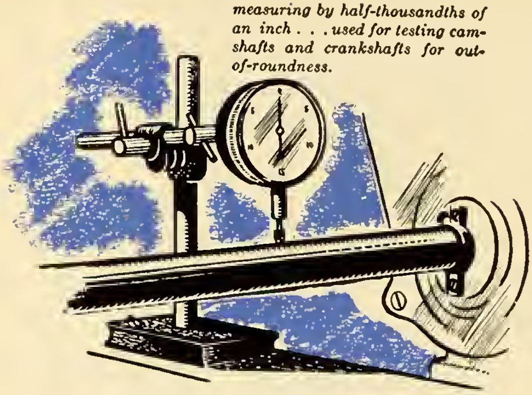

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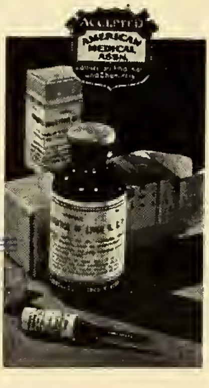

COMMUNICATION

Minnesota Medicine
Dear Sirs:

Some of my medical society friends might like to know what has happened to me.

I volunteered for the Army while I was at Pine City and was ordered to active duty on 26 Jan. 1943. Was sent to Carlisle Medical Field Service School and thence to Stark General Hospital at Charleston, S. C., where I was placed in the medical pool. While there I was a ward officer on medicine and also medical officer on several hospital trains evacuating patients from Stark. On 1 May, 1944, I was ordered to the 141st General Hospital which was then being trained at Kennedy General in Memphis. We worked at Kennedy while there and finally were alerted and debarked from Port of New York on 15 June 1944.

While overseas, we operated the 141st General in Wiltshire in Devizes, a small town about 35 miles East of Bristol. We had patients within two weeks after arriving so were lucky in not having to wait about. My duties were officer on medicine and I had charge of the Prisoner of War wards. I averaged about seventy active prisoner patients and had a very interesting experience. It certainly was varied from battle casualties to Weil's disease. Had a small series of peculiar types of edema with no evidence of protein deficiency or renal disease. These were the "war nephritis" cases described by German medical officers. Recovery was usually prompt but occasionally very prolonged though the patients were not very ill. I feel these were on a nutritional basis in spite of the fairly normal serum protein levels. We also had a large series of diphtheria in these prisoners. These were interesting for adult diphtheria at home was rare. All recovered. This experience was most interesting and valuable because of the great variety of conditions seen.

In December I was appointed chief of the Gastro-Enterology Section and had all the consultations in this field as well as proctoscopic examinations. This likewise was valuable training for there was ample work in a hospital of this size (we averaged 2000 beds). Duodenal ulcer and hepatitis were the most common organic states but functional disorders were by far the most common and a difficult problem in many cases to handle. One month of my overseas stay was spent in London where I worked at the main dispensary at U.K. base in the medical section. This was varied too but less interesting to me than ward work where you could follow the patient through his illness. Being in London was kept interesting, however, by the Germans and their V1 and V2 bombs. One narrow escape was enough for me.

When the war ended we were slated for Pacific duty because we had only been overseas 11 months at the time of V-E Day. Thus we were shipped out of England

(Continued on Page 78)

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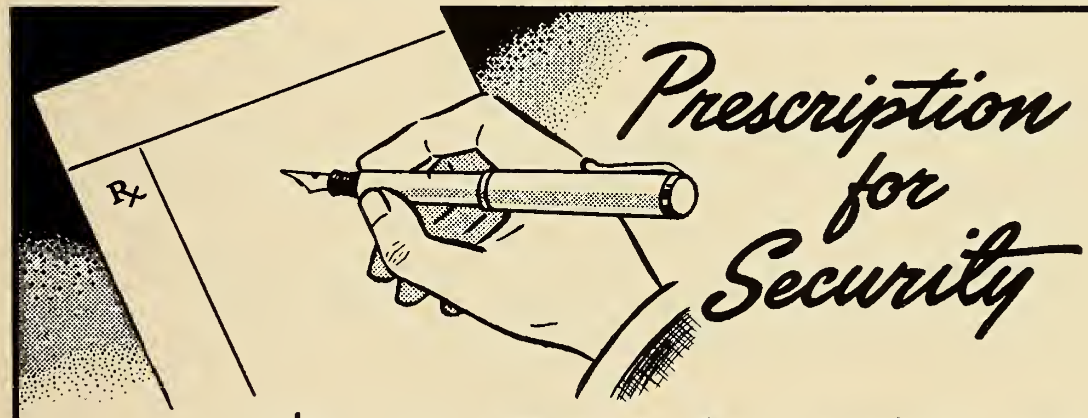

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(Continued from Page 76)

early in order to get back to the States for training. Our trip home in June was marvelous, 4½ days on the Queen Elizabeth, as compared to 11 days going over in slow convoy. We had our 30-day leave which I spent with my family in Rochester, then joined the 141st at Camp Crowder, Mo. From then on it was a matter of sweating it out. The war was soon over, yet we were still slated for Pacific duty and were most unhappy about it, feeling that we had done our share of work overseas. We completed our 6 weeks of training including setting up field hospitals under canvas, tropical disease control and even familiarization with hand grenades, rifle, and pistol. Finally, however, I was ordered to the 6th Service Command and left the 141st with which I had served so long.

My present job is Chief of the Gastro-Enterology Section here at Vaughan Hospital, at Hines, Illinois, where 6th Service sent me. It is a fine service with 102 active beds and is really busy. Work is varied but consists mostly of duodenal ulcer and hepatitis plus all the varieties of colitis. I find it most interesting especially as I do the proctoscopies for the hospital and see a great number of interesting conditions. I am fortunate in having an able Captain as an assistant so we can handle the work adequately. I feel I am fortunate in getting this service for I am doing the work I like, am plenty busy, and seeing much interesting medicine.

I have been fortunate throughout my Army Service in that I have done clinical medicine all the time and have not lost touch with it like so many have. I hope to be discharged early in the spring and take some more postgraduate work in Internal Medicine. That concludes my story and a long one it is.

Very truly yours,
GEORGE E. BROWN, JR., Capt., MC.

BERT SHEPARD ASSIGNED TO THE OFFICE OF THE SURGEON GENERAL

First Lieutenant Bert Shepard, who attracted nationwide attention last summer when he resumed his professional baseball career as pitcher for the Washington Senators three days after receiving his GI artificial leg from Walter Reed General Hospital, has re-entered the service at the request of The Surgeon General to aid in a program designed to help amputees get the greatest use from their prostheses.

In May, 1944, Lieutenant Shepard's P-38 was shot down over Germany. He suffered the loss of the lower part of his right leg, the operation being performed by German surgeons. After eight months in German hospitals and prison camps, he returned to the United States aboard the Gripsholm in February of this year.

Wearing a crude artificial leg fashioned from Red Cross materials by a fellow Canadian prisoner, Lieutenant Shepard was sent to Walter Reed General Hospital where he received a GI prosthesis. Within three days after his fitting, he was working out with the Washington Senators and later signed with them. He plays football and has been clocked in the 100-yard dash at 12.05 seconds. He is the wearer of the Distinguished Flying Cross, Air Medal with three clusters and the Purple Heart.—*News Notes,* No. 34, Office of Surgeon General.

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Reports and Announcements

MEDICAL BROADCAST FOR JANUARY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

Jan. 2—11:00 (KUOM)	Foods Undergo Many Changes in the Body
Jan. 3— 5.15 (WCCO)	Nature of Heart Disease
Jan. 5—11:30 (KUOM-KROC-KFAM)	Medicine in the News
Jan. 9—11:00 (KUOM)	The Blood Travels to All Parts of the Body
Jan. 10— 5:15 (WCCO)	Rheumatic Fever
Jan. 12—11:30 (KUOM-KROC-KFAM)	Medicine in the News
Jan. 16—11:00 (KUOM)	Waste Materials Are Removed from the Body
Jan. 17— 5:15 (WCCO)	High Blood Pressure
Jan. 19—11:30 (KUOM-KROC-KFAM)	Medicine in the News
Jan. 23—11:00 (KUOM)	Sunlight and Fresh Air Are Health Essentials
Jan. 24— 5:15 (WCCO)	Coronary Disease
Jan. 26—11:30 (KUOM-KROC-KFAM)	Medicine in the News
Jan. 28— 4:45 (WCCO)	Sore Mouth
Jan. 30—11:00 (KUOM)	Your Body Needs Regular Exercise
Jan. 31— 5:15 (WCCO)	Your Hospital in Peacetime

AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will resume its annual meetings in 1946 and has now definitely chosen Philadelphia as the place of meeting, May 13-17, inclusive. Headquarters will be at the Philadelphia Municipal Auditorium, 34th Street below Spruce.

The meeting will be conducted under the presidency of Dr. Ernest E. Irons, Chicago, Illinois, and the general chairmanship of Dr. George Morris Piersol, 3400 Spruce Street, Philadelphia, Pennsylvania.

CHICAGO MEDICAL SOCIETY

The tremendous success of the First Clinical Conference held two years ago served as a mandate to the Chicago Medical Society for the annual continuation of this type of program. Last year the Conference was called off because of government restrictions on travel. This year the Society has been able to go ahead with its plans and the Conference will be held at the Palmer House, Chicago, Illinois, on March 5, 6, 7, and 8, 1946.

There will be scientific programs consisting of half-hour lectures beginning at 8:30 A.M. and continuing until 5:00 P.M. with intermissions for viewing the scientific and technical exhibits which promise to be most outstanding.

Speakers have been secured from all sections of the United States and the program committee promises a discussion of the important fields of medicine.

A banquet is being planned for Thursday night when a speaker of international reputation will talk on a topic of general interest.

Reservations for rooms should be made through The Chicago Convention Bureau, 33 North LaSalle Street, Chicago 2, Illinois. It is important that those planning to attend this Conference make their reservations as soon as possible and arrange to room with a friend. Hotel rooms are at a premium. Early planning and reservation will prevent disappointment.

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

The first meeting for the 1945-1946 season of the Minnesota Academy of Ophthalmology and Otolaryngology was held at the Minneapolis Club on Friday, November 9, 1945.

The following men took office: Dr. K. C. Wold, Saint Paul, president; Dr. Theodore R. Fritsche, New Ulm, first vice president; Dr. C. L. Oppegaard, Crookston, second vice president; Dr. William A. Kennedy, Saint Paul, secretary-treasurer; Dr. Malcolm C. Pfunder, Minneapolis, chairman of Council.

The retiring president is Dr. A. G. Athens of Duluth.

Two papers were presented: "Air Restoration of the Anterior Chamber" by Dr. Frank Burch of Saint Paul, and "Facial Nerve Injury in Relation to Skull Fracture" by Dr. Jerome Hilger of Saint Paul.

RAMSEY COUNTY MEDICAL SOCIETY

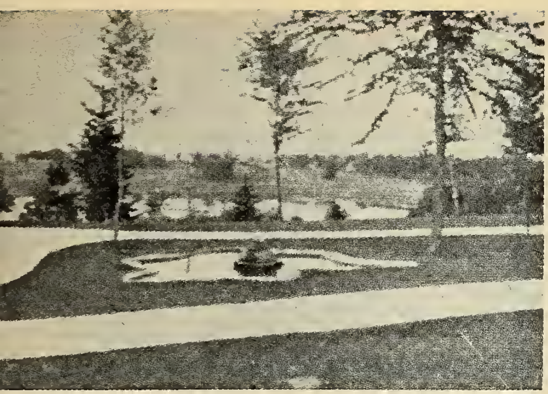
Results of the Ramsey County Medical Association election of officers, conducted by mail, were announced at the annual meeting held on November 27 at Ancker Hospital, St. Paul. Dr. Harry B. Zimmermann succeeds Dr. Justus O'Hage as president; Dr. John M. Culligan is president-elect for 1947; Dr. John R. Aurelius is vice president, and Dr. Clayton K. Williams is secretary-treasurer.

ST. LOUIS COUNTY MEDICAL SOCIETY

The annual dinner meeting of the St. Louis County Medical Society was held on December 12 at the Northland Country Club, and election of the following officers was announced: President, Dr. P. G. Boman, Duluth, who succeeds Dr. William J. Ryan, also of Duluth; vice president, Dr. Francis W. Backnik, Hibbing; secretary-treasurer, Dr. Elizabeth C. Bagley, Duluth, succeeding Dr. Robert P. Buckley, Duluth.

The guest speaker was Walter T. Ridder, foreign correspondent for the Duluth *Herald and News-Tribune*, who presented a graphic picture of the "destitution and pauperism of the European peoples."

More than 160 physicians and their wives were present.



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Mrs. Edward V. Goltz, *President*
Saint Paul, Minnesota
Mrs. John K. Butler, *Editor*
Carlton, Minnesota

STATE BOARD

Mrs. E. V. Goltz presided at the November meeting of the State Board at the Minnesota Club in Saint Paul. A large group of members was present and gave interesting reports of their organizations. The group was urged by Mrs. Harlow J. Hanson to encourage nurses to enter training. Although candidates are no longer accepted for Cadet Nurses, she reminded the group that the hospitals have their own courses and are happy to have applicants.

At the luncheon Dr. Wallace P. Ritchie talked on his experiences with the 26th General Hospital. Dr. Ritchie's mother, Mrs. Harry P. Ritchie, who has long been active in the Ramsey County Auxiliary and is a former state president, was also present.

* * *

BLUE EARTH COUNTY

The Blue Earth County Auxiliary met at the Mankato Clinic to elect officers and make plans for the year. Mrs. George Penn was elected president; Mrs. E. A. Sohmer, vice president; Mrs. Roger Hassett, secretary, and Mrs. P. G. Hoeper, treasurer. Committee chairmen appointed were *Hygeia*—Mrs. W. B. Kaufman; *Legislation*, Mrs. Roy Andrews; *Health Education and Public Relation*, Mrs. M. I. Howard, Mrs. O. H. Jones and Mrs. P. G. Hoeper; *Cancer Control*, Mrs. A. F. Kemp, Mrs. W. B. Kaufman, Mrs. M. I. Howard and Mrs. P. G. Hoeper. The doctors joined the ladies for a social evening after the meeting.

* * *

GOODHUE COUNTY

Mrs. R. F. Hedin was hostess at the November meeting of the Goodhue County Auxiliary. Because of the small membership it was decided to meet less frequently. However, members are keeping up their good work in making dressings for the Cancer Home in Saint Paul.

* * *

HENNEPIN COUNTY

Mrs. Erling Platou and Mrs. James Johnson were hostesses at the November meeting in the Medical Arts Building Lounge. Two members of the Auxiliary gave a musical program—Mrs. Richard Giere accompanied Mrs. A. S. Hoiland, who sang a vocal solo. Mr. Francis Harjashi, Professor of Japanese at the University of Minnesota, talked on "Out and Moved."

Auxiliary members staffed a booth at Dayton's at which they sold articles made by the Glen Lake Sanatorium patients, November 8 and 9. They netted over $3,000 from the sales.

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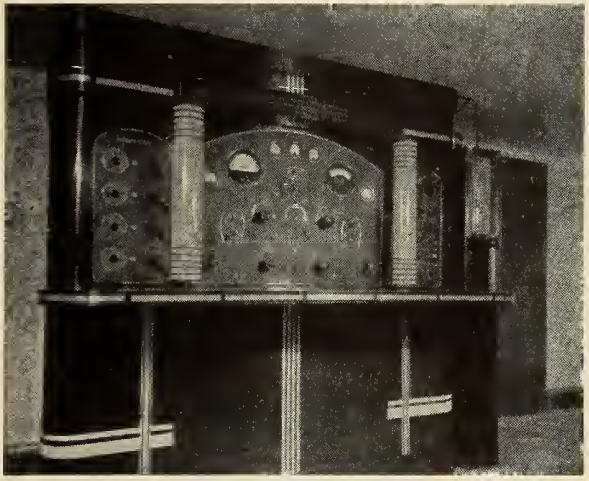

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KANDIYOHI-SWIFT-MEEKER COUNTIES

Mrs. S. B. Lindley entertained the Auxiliary at the Willmar State Hospital in November. Members heard an interesting talk on "Tuberculosis in the Army" at a joint meeting of the Medical Society and the Auxiliary. Afterwards both groups played bridge.

* * *

MOWER COUNTY

Members of the Mower County Auxiliary met at the home of Mrs. B. K. Cromwell and made cancer dressings.

* * *

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTIES

Mayo Foundation House was the meeting place of the Auxiliary last month. Members heard Evelyn Beyer, director of pre-school activities of the child health project, talk on nursery schools.

* * *

PARK REGION

Nineteen members of the Northern Minnesota Auxiliary were guests of the Park Region Auxiliary at Fergus Falls, November 3, when the Park Region Auxiliary observed the twenty-fifth anniversary of its organization at Fergus Falls in 1920. Luncheon was served at River Inn Hotel. Later, Mrs. A. C. Baker entertained at tea. Mrs. J. L. Morrill and Mrs. E. V. Goltz were guests of honor. Mrs. Goltz urged the members to become more active in civic and medical organizations.

One hundred twenty-five members and guests attended the banquet at the State Hospital in the evening. The hospital orchestra furnished dinner music. Dr. W. A. O'Brien, toastmaster, introduced Dr. Richard Bardon, president of the St. Louis County Medical Society, and Dr. J. L. Morrill, president of the University of Minnesota, as speakers of the evening.

* * *

ST. LOUIS COUNTY

New members of the Auxiliary and wives of the interns from St. Mary's and St. Luke's Hospitals were guests at a luncheon at the Hostess House. After a short business meeting, the women played bingo, using as prizes white elephants donated by the members. The proceeds, $14.85, will be added to the philanthropic fund. This amount combined with the proceeds for the rummage sale netted over $200 this year.

* * *

STEARNS-BENTON COUNTIES

Mrs. Wm. Friesleben of Sioux Rapids entertained her group at a pot luck supper in November. Mrs. T. N. Fleming, public relations chairman, reported on the progress of the tuberculosis contest, for which the Auxiliary gives a $5.00 prize.

* * *

WASHINGTON COUNTY

Eight members and two guests met at the home of Mrs. D. Kalinoff in Stillwater for the November meeting of the Washington County Auxiliary.

◆ Of General Interest ◆

Peter A. Arling, Minneapolis, has recently been made a Lieutenant Commander and is stationed on Guam.

* * *

Dr. William E. Hart has opened a hospital in Monticello.

* * *

Dr. Thomas E. Havel has returned from military service to his practice at Blue Earth.

* * *

Lieutenant Colonel George S. Bergh, who served with the U. S. Base Hospital 26 in North Africa and Italy, has returned to Minneapolis.

* * *

Lieutenant Commander Al N. Bessesen, Jr., Minneapolis, is serving in a large Naval Hospital on Samar Island in the Philippines.

* * *

Dr. Garnett B. Belote and Dr. Neil T. Norris have established a partnership for the practice of medicine in Caledonia.

* * *

Dr. David Anderson, Austin, has been discharged from military service and has resumed his practice at the Austin Clinic.

* * *

Dr. Oliver E. Sarff opened an office December 1, 1945, at 801 LaSalle Medical Building, Minneapolis, for the practice of urology.

* * *

Dr. John E. Minkler, until his recent discharge a captain and squadron surgeon in the Army Air Corps in Italy, is now in practice with the Duluth Clinic.

* * *

Dr. H. R. Tregilgas, of South Saint Paul, has been notified of his election to a fellowship in the American College of Surgeons.

* * *

Dr. John J. Ederer, formerly of Mahnomen, Minnesota, has opened offices at 4217 West 42nd Street, Minneapolis. He will engage in general practice.

* * *

Major Douglas P. Head has resumed practice at 1731 Medical Arts Building, Minneapolis. While in service he was the recipient of the Bronze Star.

* * *

Lieutenant Harry Brown, former Superintendent of Northwestern Hospital, Minneapolis, has been appointed Acting Director of Hospital Services for the Veterans Administration.

* * *

Dr. Paul F. Dwan, Minneapolis, announces that effective January 1, 1946, he is limiting his practice to rheumatic fever and diseases of the heart and circulation in infancy and childhood.

* * *

Dr. Carl J. Potthoff, Associate Professor of Public Health at the University of Minnesota, has been appointed Assistant Medical Director of the Red Cross with headquarters at Washington, D. C.

* * *

The Mayo Clinic has announced the appointment of Dr. R. J. Campbell, formerly of Bellevue, Iowa, as First Assistant Neurologist at the Clinic. Dr. Campbell recently returned from foreign military service.

* * *

Lieutenant Colonel Edward T. Evans has resumed practice at 1251 Medical Arts Building, Minneapolis. He served as chief of orthopedics in General Hospital 26 and later at Benjamin Harrison Hospital.

Dr. J. Emery Frank has re-opened his offices in Marshall after three and a half years in the Army. With rank of captain, Dr. Frank served as flight surgeon with an air force unit in England and France.

* * *

Dr. Abraham B. Rosenfield, who recently returned to his practice in Hibbing from four years in the Navy Medical Corps, has been reappointed school physician for District No. 27.

* * *

Dr. H. Robert Ransom, formerly of Staples, has opened offices for practice in Crosby and Ironton, since his recent discharge from the Army Medical Corps. He will make his home in Crosby.

* * *

Dr. A. J. Hagen of Moorhead was a delegate to the U. S. Chapter of the International College of Surgeons which convened in Washington, D. C., December 6, 7 and 8, 1945.

* * *

Dr. W. W. Will, a former president of the Minnesota State Medical Association, was elected a Fellow of the International College of Surgeons at the annual convocation at Washington, D. C., December 7, 1945.

* * *

Dr. William R. Blomberg has purchased the building which he has been occupying in Princeton and will begin extensive remodeling as soon as the weather permits.

* * *

Captain Gilbert P. Wenzel, Saint Paul, who has been stationed in the Central Pacific for the past eight months, was recently transferred from Guam to Okinawa.

* * *

Major Louis Sperling, Minneapolis, has located in Beverly Hills, California. He is associated with Mark Rabwin in the practice of surgery at 9730 Wilshire Boulevard.

* * *

Major Harold J. Black has returned to Saint Paul following his discharge from service. He was Commanding Officer of the 53rd Field Hospital in the active service in Normandy, Belgium and Germany.

(Continued on Page 86)

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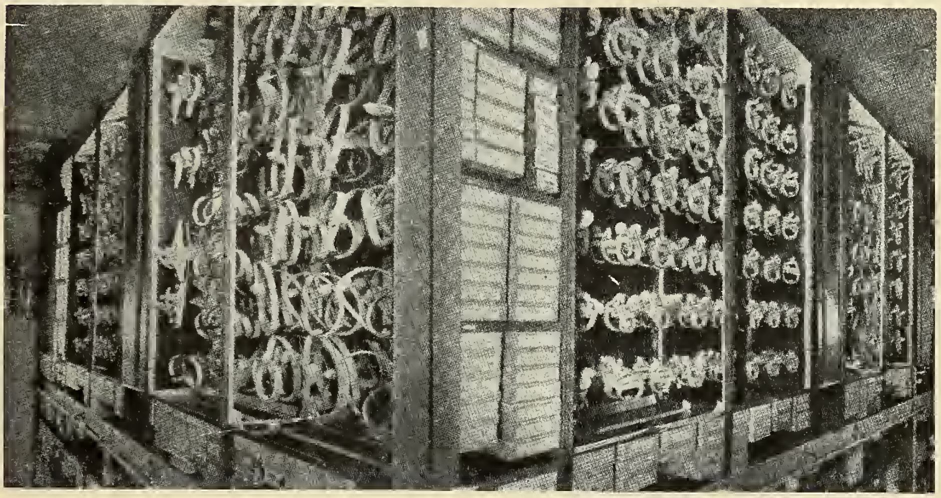

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(Continued from Page 84)

Dr. Harold Hans Noran, formerly of Washington, has opened offices at 507 Physicians and Surgeons Building, Minneapolis. He will limit his practice to Neurology and Psychiatry.

* * *

Dr. Maurice L. Straus, who has returned from service, will reopen his office at 726 White Bear Avenue, Saint Paul, on February 1. Dr. Straus served as captain in the Medical Corps with the 41st Infantry in northern Australia and in New Guinea.

* * *

Dr. Willis L. Herbert, captain in Army Medical Corps, entered service in March, 1944. He served in blood donor centers in Detroit and Minneapolis, and the separation center at Camp McCoy. He has resumed general practice with offices at 307 Hennepin Avenue.

* * *

Dr. Victor K. Funk, commander, entered service in April, 1942, and served as senior medical officer aboard the *USS Orion* in the Pacific for seventeen months. Dr. Funk has rejoined the staff at Glen Lake Sanatorium.

* * *

Dr. Henry W. Woltman was elected staff president and Dr. John Berkman was re-elected secretary of the Mayo Clinic staff at the annual meeting held at the Foundation House. Dr. John de Jarnette Pemberton is the retiring president.

* * *

The marriage of Dr. James Peter Murphy to Lieutenant Barbara E. Fuller, Army nurse, took place at the post chapel at Langley Field, Hampton, Virginia. Dr. Murphy is the son of Dr. and Mrs. Francis E. Murphy, of Minneapolis.

* * *

Dr. George Olds, who was associated with Dr. Bernard Gallagher in the practice of medicine at Waseca at the time of his induction into military service, has opened offices in New Richland. Dr. Olds served as a captain in the Army Medical Corps.

* * *

Dr. Rolf M. Iverson, formerly of Pasadena, has become associated with Dr. Robert G. Allison in the practice of radiology. He served a Fellowship in the Graduate School of the University of Minnesota at Rochester before coming to Minneapolis.

* * *

At a meeting of the Range Medical Society held in Virginia, Minnesota, on December 18, 1945, the following officers were elected for the year, 1946: President, Dr. R. A. Salter, Virginia; Vice President, Dr. F. R. Kotchevar, Eveleth; Secretary, Dr. David A. Sher, Virginia.

* * *

Dr. Nathan C. Plimpton, Jr., has been discharged from the Medical Corps of the Army and is associated with Dr. O. J. Campbell, 1251 Medical Arts Building, Minneapolis, in the practice of surgery. Dr. Plimpton was a Fellow in the Graduate School of the University of Minnesota at Rochester before enlistment.

* * *

While on a hunting trip near Cayuga, North Dakota, Dr. Frederick A. Thysell, of Moorhead, slipped as he got out of his car and fractured a vertebra. Dr. Thysell was taken by ambulance to St. Angar's Hospital in Fargo, where he was expected to have to remain for some weeks.

* * *

Dr. Einer M. Monson, captain in the Army, entered the service in November, 1942, and was on Surgical Service with the 327th Station Hospital in England and France for sixteen months. He has returned to general practice with offices at 4144 Fremont Avenue North.

* * *

Dr. Karl Sandt, major, entered service in February, 1942, and went overseas in October, 1942. He was Chief of Eye Service for General Hospital 26 in England North Africa and Italy. He has returned to his practice of ophthalmology in his offices in the Medical Arts Building.

* * *

Dr. Walter Alvarez, Mayo Clinic, was guest lecturer for the Autumn Postgraduate Course of Queen's University Medical Faculty in Kingston, Ontario. Dr. Alvarez' subjects were "Diagnostic Hints for General Practitioners", and the "Diagnosis of Puzzling Types of Pain."

* * *

Dr. William J. Noonan, lieutenant colonel, entered service in May, 1941, and served as Chief of the Urology Department at Camp Gruber, Oklahoma, and Glennan General Hospital, Okmulgee, Oklahoma. He has resumed his practice of urology in temporary offices in the Medical Arts Building.

* * *

Dr. Paul W. Kebler, major, entered service in April, 1942, and was sent as Laboratory Officer for General Hospital 26 in England, North Africa, and Italy. He has returned to his position as Chief of Laboratories of the Division of Preventable Diseases at the University of Minnesota.

* * *

Dr. Robert E. Johnson, major, entered service in February, 1942, and went overseas in October as war surgeon with General Hospital 26 in North Africa and Italy. Later he was commanding officer of the Adriatic Base Command General Hospital. He has returned to general practice, with offices in the Medical Arts Building.

* * *

The War Department has announced the promotion of Dr. Edward Dyer Anderson, of Minneapolis, to the rank of captain in the Navy Medical Corps.

Captain Anderson is now serving as Chief Medical Officer at the Marine Base on Parris Island, North Carolina, after twenty-one months of duty aboard a hospital ship.

* * *

After three years in the armed forces, Dr. Russel Carlson has returned to his practice in association with Dr. Francis M. McCarten in Stillwater. Dr. Carlson had been with Dr. McCarten for a year and a half when he was inducted into military service, where he was a captain with twenty-one months' duty in the European Theatre.

Dr. Dean K. Rizer, major, entered service in November, 1942. He went overseas in July, 1944, and served as Chief of the Medical Section of the 119th General Hospital in England, and the 220th General Hospital in France. He has returned to his practice of internal medicine with offices in the Medical Arts Building.

* * *

After three years as commander in the Navy, Dr. Chester J. Olson has returned to his offices at Belle Plaine. Dr. Olson's service included duty at Camp Farragut, Idaho, Columbia University, Okinawa, and the Naval Training Base at Great Lakes, where for the past four months he has been engaged in discharge examinations.

* * *

Dr. John R. Paine, lieutenant colonel, entered service in February, 1942, and went overseas in October of the same year. He was Assistant Chief of Surgical Service with General Hospital 26 in England, North Africa and Italy. Dr. Paine has returned to his position of Associate Professor in Surgery at the University of Minnesota.

* * *

Dr. Reinhold M. Ericson, major, in service from July, 1943, was sent overseas in November, 1944, and attached to the 116th Evacuation Hospital at Sarreburg, France, and later, after the Rhine crossing, near Munich and at the Dachau concentration camp. An eye, ear, nose and throat specialist, his offices are in the Physicians and Surgeons Building.

* * *

Dr. Rudolph E. Hultkrans, captain, in Army, entered service in August, 1943; was twenty-two months as chief of orthopedics at the 103rd Evacuation Hospital from the Normandy landing and through France into Germany. Was later assigned to the 48th General Hospital in Marseilles, France. Has returned to his offices in the Medical Arts Building for the practice of surgery.

* * *

Dr. Lester Fogner, who was practicing in association with Dr. Wallace R. Smith at Grand Marais prior to his induction into the armed forces, has been appointed on the staff of the Veterans' Hospital in Minneapolis.

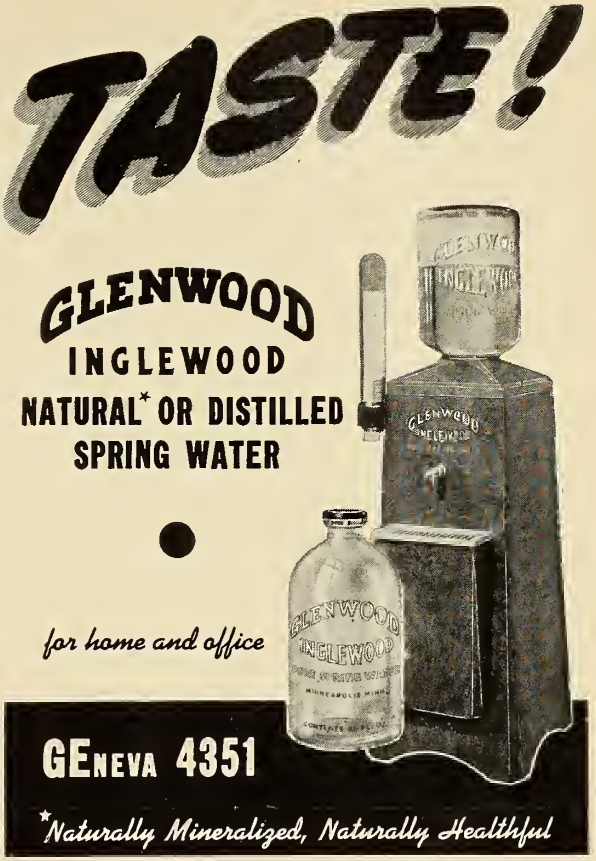
While he was in service Dr. Fogner, a major in the 28th Infantry, was taken prisoner by the Germans on December 17, 1944. He was liberated the following May.

* * *

Dr. Warner Ogden has resumed practice at his former office, 714 Lowry Medical Arts Building, Saint Paul, following his discharge from the Navy. Stationed first at the Naval Hospital on Treasure Island, San Francisco, Commander Ogden spent twenty-one months at a Shore Base in the Northern Solomons with Naval Aviation, and since June, 1945, has been assigned to the Naval Hospital at Corvallis, Oregon.

* * *

At the annual clinical meeting of the Ramsey County Medical Society held at Ancker Hospital, November 29, 1945, the staff voted to name the annual meeting the Arnold Schwyzer Clinical Meeting of the Ramsey County Medical Society in memory of the late Dr. Schwyzer,



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GYNECOLOGY—Two-week Intensive Course, starting February 25. One-week Personal Course in Vaginal Approach to Pelvic Surgery, starting February 18.

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who for many years was one of the outstanding Clinicians of Saint Paul and the originator of the annual clinical meeting of the society.

* * *

Dr. Donald McCarthy, captain in the Navy, entered service in September, 1940. He was in Naval Medical Corps recruitment work for fifteen months and was then made Chief of Medicine on the H.S. *Relief,* with duty in both Atlantic and Pacific Theatres for the following two years. Subsequently he was Chief of Medicine at the Naval Hospital at Great Lakes, Illinois, and then Senior Medical Officer on Midway Island. He has resumed his practice of internal medicine with offices in the Medical Arts Building.

* * *

Dr. William T. Walsh, captain, entered service in February, 1942, and went overseas in October, 1943, as flight surgeon for the 312th Bombardment Group. He wears six battle stars, a Unit Citation and the Philippine Liberation Ribbon and Star, earned in service in Australia, New Guinea, the Philippines and Okinawa. He has returned to general practice with offices in the La Salle Building.

* * *

Dr. Oscar Lipschultz, lieutenant colonel, entered service in March, 1942, and went to North Africa and Italy in October of the same year as Chief of X-ray Service for General Hospital 26. Later he was assigned to the 45th General Hospital in Italy. Dr. Lipschultz has resumed his practice in his offices in the Medical Arts Building and has also returned to his position as Director of X-ray Department of the General Hospital.

* * *

Dr. Paul Swedenburg, formerly of Swanville, has entered medical practice at Little Falls, where he will share offices with Dr. Douglas L. Johnson and Dr. Roman V. Fait.

A graduate of the University of Minnesota Medical School, 1931, Dr. Swedenburg was associated with Dr. Edwin J. Simons in Swanville when he was inducted into service five years ago.

* * *

Dr. W. McK. Craig, formerly neuro-surgeon of the Mayo Clinic who is at present chief of the Bethesda Naval Hospital, Maryland, was one of four distinguished surgeons elected to honorary fellowship in the International College of Surgeons at Washington, D.C., on December 6. Dr. Craig is the only physician in American history ever to be given the rank of Rear Admiral He was the principal speaker at the annual banquet, his subject being "Surgery in the Navy."

* * *

Dr. R. B. Graves, while in Red Wing on terminal leave, purchased a building where he expects to occupy offices some time in January. Before entering military service in 1942, Dr. Graves was a member of the Medical Block Clinic in Red Wing.

In seventeen months of overseas duty as Flight Surgeon of a heavy bomber squadron, Dr. Graves earned the ETO ribbon with six battle stars and flight surgeon's wings.

* * *

Dr. W. S. Broker, who has been in tuberculosis sanatorium work for the past twenty-four years, has resigned his position as superintendent of Fair Oaks Lodge Sanatorium at Wadena to accept an appointment as superintendent of Pleasant View Sanatorium, East St. Louis, Illinois. He succeeds Dr. Robinson Bosworth, who was formerly executive secretary of the Minnesota Sanatorium Commission. Dr. Bosworth intends to enter private practice in Rockford, Illinois.

* * *

Dr. I. E. Bigler, a 1938 graduate of the University of Minnesota School of Medicine, who has been in military service since 1941, has opened offices in Crosby and bought a home there. Prior to his induction into the armed forces, he had been practicing at Ada, Oklahoma, for two years. Dr. Bigler was a flight surgeon with the Air Transport Command in the European Theater of Operations and also served with an Arctic Search and Rescue Squadron in Labrador for a year.

* * *

After two years in the Pacific Theatre, Dr. John E. Westrup has been discharged from service and is again in practice in Lanesboro, where he had been located for three years prior to his induction into the Navy. As lieutenant commander, Dr. Westrup served at Saipan, Attu and Tarawa. Later he was assigned to the Office of Procurement in Chicago, and recently he was at the Separation Center at Great Lakes Naval Station.

* * *

The lectures given at the December session of the Annual Industrial Safety School in Duluth included the following: "Digestive Disturbances," by Dr. Philip F. Eckman; "Industrial Dermatoses," by Dr. Merriam G. Fredericks; "Respiratory Hazards in Industry," by Dr. G. Arvid Hedberg; "Heart Disease," by Dr. Frank J. Hirschboeck; "Sprains and Strains," by Dr. S. Sverre Houkom; and "Sickness Can Be Prevented," by Mario Fischer, city director of public health.

* * *

Dr. Andrew V. Grinley, formerly of Rockwell City, Iowa, is now associated in practice with Drs. Francis and Raymond Jolin and Maurice McKenna at Grand Rapids.

Dr. Grinley graduated from Rush Medical College in Chicago and interned at Ancker Hospital in Saint Paul, where he was also resident physician. He was in military service from May, 1942, until his recent discharge, and served in the ETO for thirty-nine months.

* * *

Mr. M. Albert Linton, chairman of the Life Insurance Medical Fund, has announced that grants totaling $126,000 to be used this year for research into the cause of cardiovascular disease have been made to Columbia, Yale, Washington (St. Louis), Minnesota and Pennsylvania Universities, and to Southwestern Medical College at Dallas, Texas. Dr. Maurice Visscher of the Department of Physiology and Dr. Arthur Kirschbaum of the Department of Anatomy will supervise the expenditure of research funds at the University of Minnesota.

* * *

Dr. Harry B. Neel returned to his practice of surgery in the Albert Lea Medical and Surgical Center in November, after three years service in the Navy. In addition to duty at several naval hospitals in the United

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States and Hawaii, Dr. Neel served aboard the H. S. *Solace* during the campaigns of the Marshall and Palau Islands, and the Mariannas.

Since his return from overseas duty a year ago, Dr. Neel had special training in x-ray diagnosis and was in the x-ray division at the U. S. Naval Hospital in Norman, Oklahoma, until his recent discharge.

* * *

After twenty-five years of medical practice in association with his brother, Dr. Berton J. Branton, at the Willmar Clinic, Dr. Aloys F. Branton has left Willmar for Chattanooga, Tennesse, where he will be superintendent of the Baroness Erlanger Hospital, an institution of 700 beds.

Dr. Branton is a graduate of the University of Minnesota Medical School, Class of 1920. He served as president of the Minnesota Hospital Association for several terms and had been executive secretary for the past eight years.

* * *

After an absence of five years in the Army Medical Corps, Dr. N. J. Kulzer has returned to his practice of medicine and surgery in Hastings. With rank of captain, Dr. Kulzer was on overseas duty for sixteen months. In January, 1943, he was transferred to the O'Reilly General Hospital, Springfield, Missouri, orthopedic and plastic service. In April, 1945, he was sent to Carson General Hospital, Colorado Springs, for surgical service and remained there until discharged in November.

Dr. W. E. Parker, who has been associated with the Davis Clinic at Wadena, since his honorable discharge from the U. S. Army in August, 1945, has located in Sebeka.

Dr. Parker graduated from the medical department of the University of Minnesota in 1934 and served two years interneship in Oklahoma City, Oklahoma. He then practiced medicine at Davis, Oklahoma, for six years, until he entered the service in May, 1942.

* * *

Dr. Clayton E. J. Nelson, recently discharged from the Army Medical Corps after three years of service, is now practicing at the Gamble Clinic in Albert Lea.

Dr. Nelson is a graduate of the University of Minnesota Medical School, and served his internship at Bethesda Hospital, St. Paul, and Augustana Hospital, Chicago. While in service he was on the staff of the 79th General Hospital, which was located successively at Belfast, Ireland, Southhampton, England, and north of Rheims, France, where he specialized in orthopedics.

* * *

A fire, which is believed to have originated in a defective heating plant, completely destroyed the office of Dr. William G. Rogne's at Spring Grove, while the doctor was in El Paso, Texas, awaiting his discharge from military service. When the blaze was finally extinquished, all that remained of the fine structure which Dr. Rogne had completed in 1941 were the outside walls. During his absence, Dr. Rogne had stored his equipment in the building and some of it was saved. Both building and equipment were fully covered by insurance.

* * *

Dr. Marland R. Williams, Cannon Falls, has announced that hereafter he will be associated in practice with Dr. Ralph H. Larson, who was recently released from military service.

Dr. Larson graduated from the University of Minnesota Medical School in 1940 and entered the Army Medical Corps the following year. He was on duty in military hospitals in this country until 1943, when he was sent to the European Theatre as battalion surgeon with an infantry division. Wounded, he was evacuated to England and after his recovery was attached to a general hospital there.

* * *

Dr. Victor J. Bruder has resigned as radiologist at the Winona General Hospital and the Winona Clinic and hereafter will be associated with the Gunderson Clinic in La Crosse, Wisconsin.

A native of London, England, Dr. Bruder received both his Bachelor of Science and medical degrees from Loyola University in Chicago. Following the completion of his internship at the Waterbury Hospital in Waterbury, Connecticut, he specialized in x-ray diagnosis and treatment and radium therapy at Johns Hopkins Hospital in Baltimore. He was also instructor in Radiology at Johns Hopkins University. He has been certified as a specialist by the American Board of Radiology, and is a member of the National Board of Medical Examiners.

* * *

Dr. Alvin M. Nielson, recently discharged from the Navy after three years of service, has returned to his practice in Northfield.

Following a course in jungle training on Samoa, Dr. Nielson, with rank of lieutenant, served with the Second Marine Division in New Zealand and participated in the campaigns of Tarawa, Saipan and Tinian. He was awarded the Legion of Merit—one of the highest Navy decorations—a Presidential Citation, and the Purple Heart.

Dr. Nielson graduated from the University of Minnesota Medical School and served his internship at St. Joseph's Hospital in Saint Paul. He had been in practice in Northfield for two years when he was called into service.

* * *

Dr. Robert Otto Meyer, whose books and articles—numbering about 350—are standard works in medical libraries, was admitted to American citizenship in the Minneapolis Federal Court in December.

Dr. Meyer, honorary professor of gynecological pathology at the University of Berlin, fled with his wife from Germany when war was declared in 1939. He was enabled to come to America where the University of Minnesota made him a clinical associate without pay. Since then his expenses have been paid by American physicians who were his former students, with some assistance from the Jewish Refugee Fund. Dr. Meyer is now engaged in private teaching.

Dr. John McKelvey, head of the Department of Obstetrics and Gynecology at the University, is one of a number of American physicians who were privileged to study under Dr. Meyer in Berlin.

Mrs. Meyer died in this country in 1940.

* * *

Announcement has been made by Dr. Harry N. Sutherland, of Shipman Hospital at Ely, of the appointment of Major John D. Barker to the hospital staff.

Dr. Barker, a member of the Army Medical Reserve Corps, was practicing at Warren when he was called to active duty in July, 1941. As a first lieutenant, he served at a station hospital at the Portland Army Base until January, 1943, when he was ordered to the aviation school at Randolph Field, Texas, for study. On completion of his work he was returned to the West Coast where he served as flight surgeon with various groups until November, 1943, when he was sent overseas. He returned from Munich last fall wearing two Presidential Unit Citation ribbons, the Bronze Star Medal and six battle stars.

A native of Hibbing, Dr. Barker graduated from the University of Minnesota School of Medicine in 1939 and completed his internship at St. Mary's Hospital in Duluth in 1940.

* * *

Drs. Arnold O. Swenson, Karl E. Johnson, Daniel W. Wheeler and Gordon C. McRae, all of Duluth, have been discharged from military service and are again in practice.

Dr. Swenson — commander — was in service for four and a half years and stationed at Naval hospitals in Bremerton, Washington, Portsmouth, Virginia, and San Francisco. He served as Chief of Surgery in a fleet hospital in New Guinea and Senior Medical Officer at a Navy base in Manila.

Dr. Johnson — Commander — served four and a half years as Senior Medical Officer and Chief of Surgery in this country, Hawaii, Midway Islands, Kwajalein, Guam and Majuro. He wears the Purple Heart for wounds received on Guadalcanal, and for his surgical work was honored with a special letter of commendation and a Presidential Unit Citation.

Dr. MacRae — lieutenant colonel — entered service in 1942. He was Commanding Officer of the 34th Station Hospital in England for two years, and later held the same office in the 53rd General Hospital.

Dr. Wheeler — captain — enlisted in the Navy immediately after Pearl Harbor. He was stationed at a Naval Base Hospital in Bremerton, Washington, and later was Executive Officer of a Corps Evacuation Hospital on Okinawa.

* * *

The Hennepin County Medical Society has announced the return from military service of the following physicians:

Dr. Charles A. Aling, major, assigned to 100th Evacuation Hospital in France and Germany, has returned to his offices at 2300 Central Avenue, Minneapolis.

Dr. Samuel G. Balkin, major, attached to evacuation hospital throughout entire Italian campaign has returned to offices in the Medical Arts Building.

Dr. Reuben Berman, major, entered service in August, 1941, and served as flight surgeon in the Eighth Air Force in England, and was later on a medical intelligence team with the Ninth Air Force in France, Germany and Austria. He was awarded the Bronze Star Medal. Dr. Berman has resumed practice of internal medicine in temporary offices in the Medical Arts Building.

Dr. Harvey Brekke, captain in the Army, entered service in June, 1942, sent overseas in November, 1943, assigned as medical and surgery officer with the Eighth Convalescent Hospital in England, France, Holland and Germany. Dr. Brekke has returned to his offices in the LaSalle Building, where he is associated with Dr. Iver Sivertson.

Dr. Carl G. Casper, major, entered service in April, 1941, went to South Pacific in March, 1942, where he served throughout entire New Guinea campaign as orthopedist with the Tenth Evacuation Hospital and the 363rd Station Hospital. Returned to this country, he was assigned to the Mayo General Hospital in Galesburg, Illinois. He has resumed practice of orthopedics in Medical Arts Building.

Dr. Ray F. Cochran, lieutenant-commander, entered service in October, 1942, was attached to Milne Bay Hospital and participated in five landings; later at the Naval Hospital in San Diego, California. He has resumed his practice of obstetrics, with offices at 1009 Nicollet Avenue.

Dr. Reuben F. Erickson, lieutenant colonel, entered service in February, 1942, and served as executive officer of the Twenty-sixth General Hospital in North Africa and Italy. He returned to this country and was executive officer at the convalescent hospital at Camp Butner, North Carolina. He has resumed his practice of gynecology and obstetrics, with offices in the La Salle Building.

* * *

The Ramsey County Medical Society has announced the return from military service of the following members:

Dr. Walter D. Brodie, lieutenant commander, in service from May, 1945, to September 27, 1945. Offices in Lowry Medical Arts Building.

Dr. Byron B. Cochran, lieutenant colonel, in service from January 1941, to January, 1946. At Miller Hospital under a University Fellowship in Opthalmology.

Dr. Henry B. Clark, Jr., major, in service from December, 1940, to February, 1946. Offices in Lowry Medical Arts Building.

Dr. Kenneth C. Cook, captain, in service from May, 1942, to June, 1945. Office address, 896 Payne Avenue.

Dr. Robert K. Grau, captain, in service from February, 1942, to November, 1945. Offices at 366 North Prior Avenue.

Dr. Albert F. Hayes, major, in service since February, 1942; terminal leave expires on March 8, 1946. Offices in Lowry Medical Arts Building.

Dr. William W. Heck, major, in service from October, 1942, to October, 1945. Offices in Lowry Medical Arts Building.

Dr. R. W. Marks, captain, in service from November, 1941, to December, 1945. Offices at 61½ West Winifred Street.

Dr. J. Lawrence Noble, major, in service from September, 1942, to October, 1945. Offices in the Lowry Medical Arts Building.

Dr. Burton Rosenholtz, lieutenant commander, in

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service from January, 1943, to November, 1945. Now resident physician in psychiatry, Bellevue Hospital, New York City.

Dr. C. L. Steinberg, commander, in service since October, 1942. Terminal leave expired in January, 1946. Offices in Lowry Medical Arts Building.

Dr. B. A. Weis, commander, in service from August, 1942, to January, 1946. Offices at 350 St. Peter Street.

UNIVERSITY NEWS

An electron microscope has recently been installed in Millard Hall at the University of Minnesota Medical School. The following are among the investigations which will involve the use of the microscope: the intracellular identification of a viruslike agent responsible for the high percentage of mammary carcinoma in susceptible strains of mice; microscopic examination of bone, dentin and enamel; a study of the nature of virus inclusions in certain diseases such as vaccinia and herpes; studies of the finer details of bacteria with diameters of the order of 0.5 microns.

A gift of $25,000 was made to the Medical School by the Ebin Foundation of Minneapolis in support of five graduate medical fellowships of $1,000 a year, each to be awarded to veterans of World War II immediately.

Dr. J. Arthur Myers, Professor of Preventive Medicine and Public Health, has been elected Editor-in-Chief of the *Journal of the American College of Chest Physicians.*

Dr. Wesley W. Spink, Associate Professor of Medicine, gave the First Annual Newton Evans Lecture in Bacteriology and Pathology at the College of Medical Evangelists on November 29, 1945. His lecture was entitled "Brucellosis: Diagnostic and Therapeutic Considerations."

At the invitation of the Yale Medical Society, Dr. Robert G. Green, Professor of Bacteriology, presented a lecture on "Health and Disease in Wildlife as Exemplified by Tularemia," on January 9. During the period of his three-day visit; he also gave seminars on: "Immunology of the Milk Factor"; "Vitamin B_4 Inactivation by Raw Fish"; and "Cell-Blockade by Modified Distemper Virus."

Dr. Owen H. Wangensteen, Professor of Surgery and Head of the Department, presented a lecture on December 14 before the Alpha Omega Alpha Society at Stanford Medical School, California, entitled "Intestinal Obstructions." On December 15 he presented a lecture before the California Academy of Medicine, San Francisco, entitled "The Ulcer Problem."

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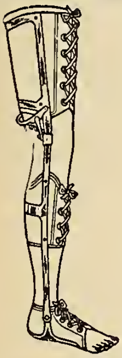

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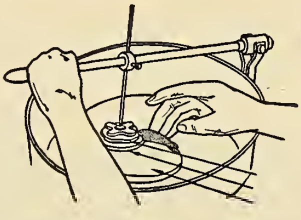

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

MEN WITHOUT GUNS. Text by DeWitt Mackenzie, War Analyst of the Associated Press; descriptive captions by Major Clarence Worden, Medical Department of the United States Army; foreword by Major General Norman T. Kirk, Surgeon General, United States Army. 152 pages. Illustrated, including 118 plates in full color by famous contemporary artists. Price $5.00, cloth. Philadelphia: Blakiston Co., 1945.

CHARTER OF SUGGESTED SCHOOL POLICIES. Published by the Health Education Council, 10 Downing St., New York. Obtainable through Teachers' College, Bureau of Publications, Columbia University, New York, Price $0.25.

Devised as a guide to show how schools and communities can devise balanced programs of health education and health care in schools, this document represents the combined viewpoints of fifteen national organizations concerned with school health. It contains many valuable suggestions for those concerned with the health and nutrition of school children.

PEDIATRIC X-RAY DIAGNOSIS. John Caffey, M.D., Associate Professor of Pediatrics, Columbia University. 838 pages. Illus. Price $12.50. Chicago: Year Book Publishers, 1945.

If one were to say that this book fills a definite need, he would be correct in so doing, because it is an excellent work on diagnostic roentgenology rather than on the roentgenology of pediatrics alone, as the title states. With the exception of the roentgen diagnosis of degenerative diseases, pregnancy, gynecology, and oncology, Caffey's "Pediatrics X-Ray Diagnosis" treats most of the subjects encountered in general diagnostic roentgenology in an admirable manner.

The text is divided into various sections, such as the head and neck, the abdomen and gastro-intestinal tract, et cetera. The sections on the extremities and spine, which make up one-third of the book alone, make it worth while to anyone interested in these fields of medicine. The thoracic section constituting one-fourth of the book is invaluable to the pediatrician, cardiologist and, of course, the roentgenologist and general practitioner.

Controversial subjects of roentgenology, such as the matter of the diagnosis of appendicitis by x-ray and the thymus question, are treated with positive finality, a spirit which pervades the entire work. The limits of roentgen diagnosis are not underemphasized. The pathological terminology is unusually good.

The make-up of the book is exceptionally good, the illustrations are clear, and the diagrams informative. Typographically, it is very easy to read.

The outstanding features are two in number: (1) the rational approach to roentgenology based on embryology, anatomy and pathology, and (2) the numerous "pearls" of incidental information found in the work. The book is modern but does not seem to be dated and can be recommended to anyone who is ever in the familiar situation of deducing diagnostic information from a roentgenogram.

Leo A. Nash, M.D.

REPORTS AND ANNOUNCEMENTS

(Continued from Page 80)

WASHINGTON COUNTY SOCIETY

The annual meeting of the Washington County Medical Society was held December 11, 1945. Aside from the election of officers for 1946, an interesting discussion of health preserving activities in our schools was held.

The meeting was graced by the presence of two members just released from service, Captain George McC. Ruggles, M.D., of Forest Lake and Captain Russell E. Carlson, M.D., of Stillwater.

Major William W. Moir, M.D., is now serving a residency in the Wisconsin General Hospital at Madison, Wisconsin. That leaves only one member still in the service, Commander Samson, M.D., who is expected to be released at an early date.

W. R. Humphrey, M.D., who is vacationing in his native state, Virginia, took time to attend the meeting of the International College of Surgeons in Washington. He is expected home sometime soon.

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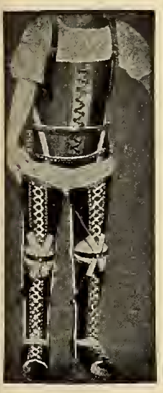

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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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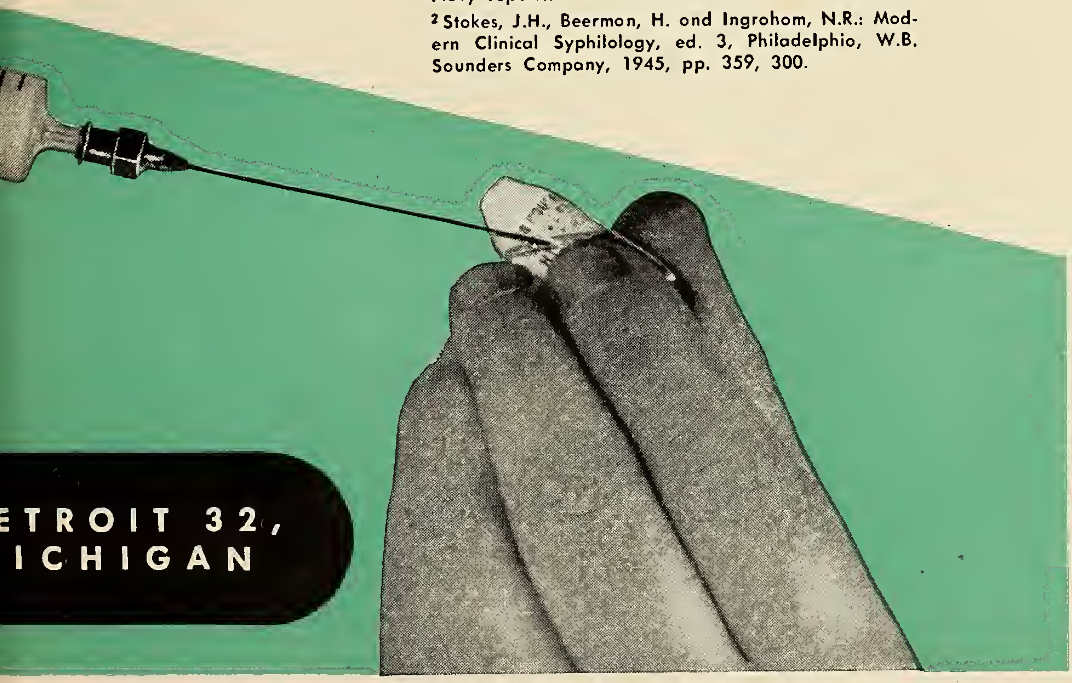
[1] U.S. Nav. M. Bull. 45:783, 1945, and previous annual Navy reports.

[2] Stokes, J.H., Beerman, H. and Ingraham, N.R.: Modern Clinical Syphilology, ed. 3, Philadelphia, W.B. Saunders Company, 1945, pp. 359, 300.



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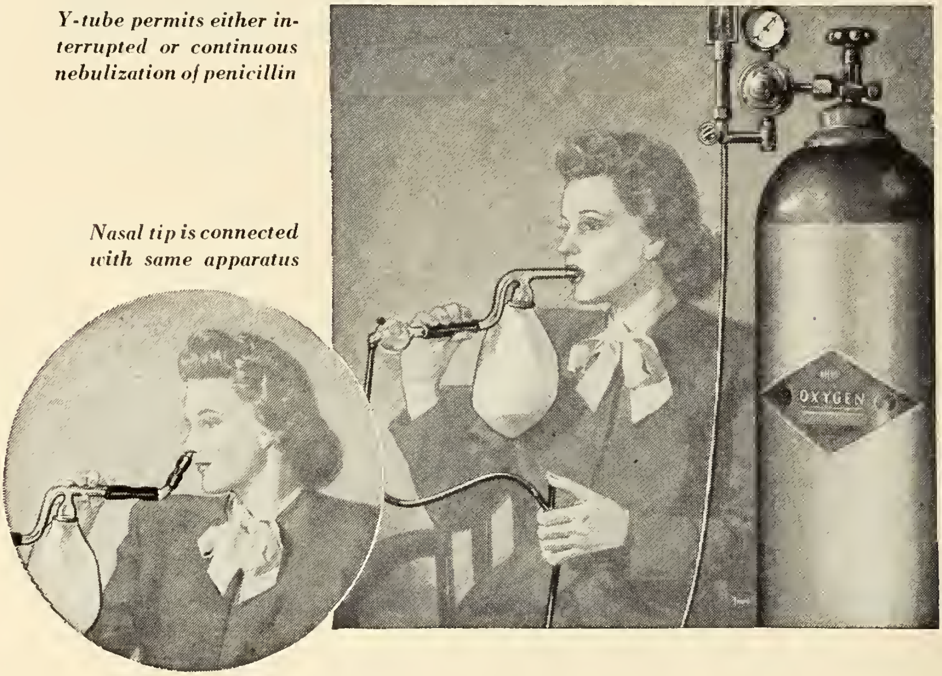

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Volume 29 **February, 1946** **No. 2**

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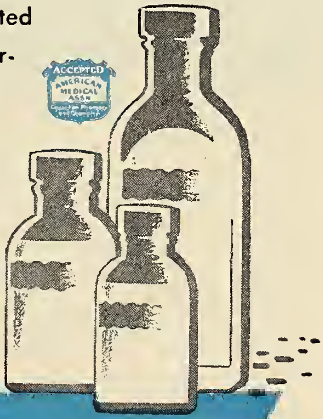

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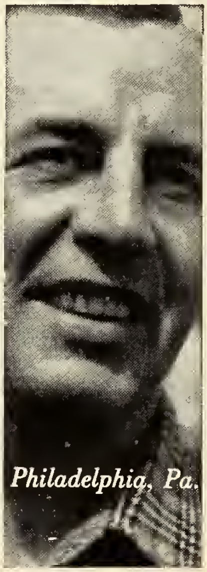

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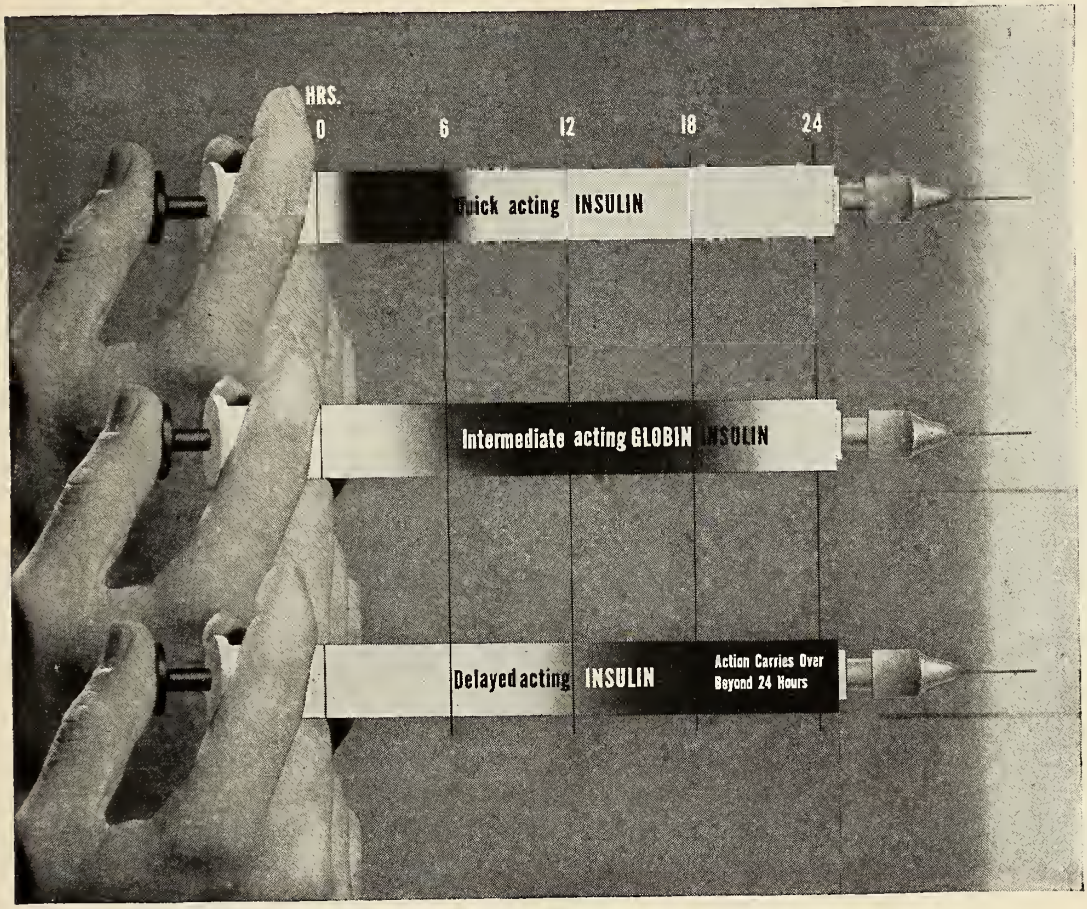

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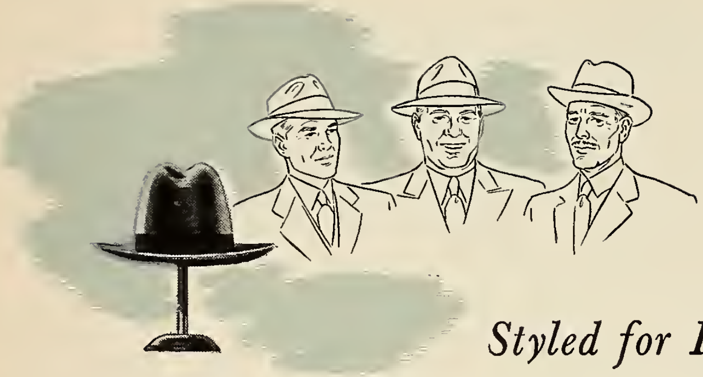

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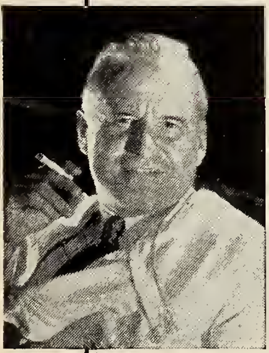

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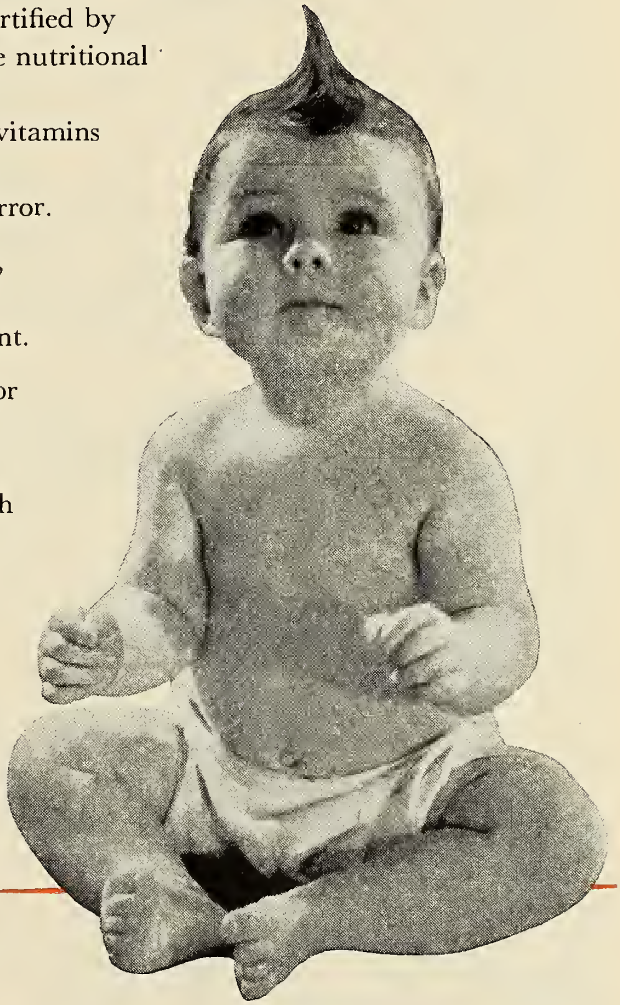

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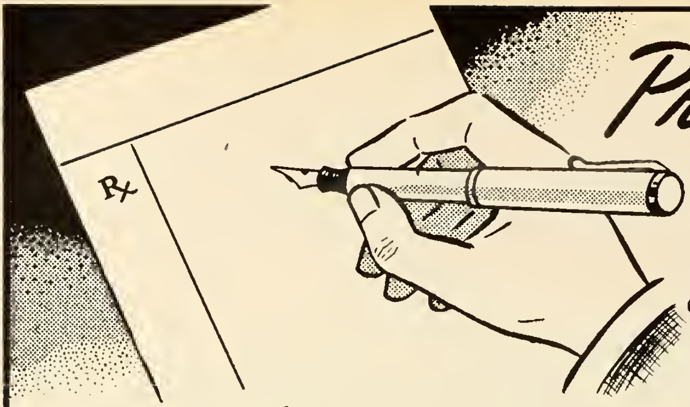

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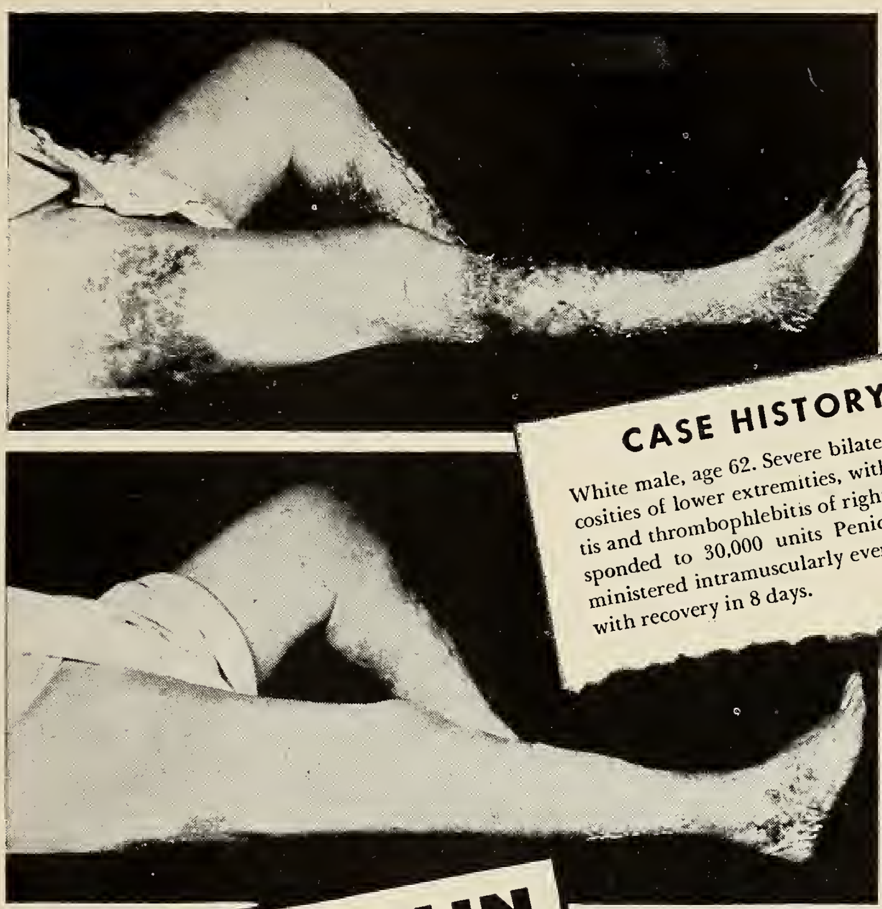

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*Keefer C. S. et al.: New Dosage Forms of Penicillin, J.A.M.A. 128: 1161 (Aug. 18) 1945.

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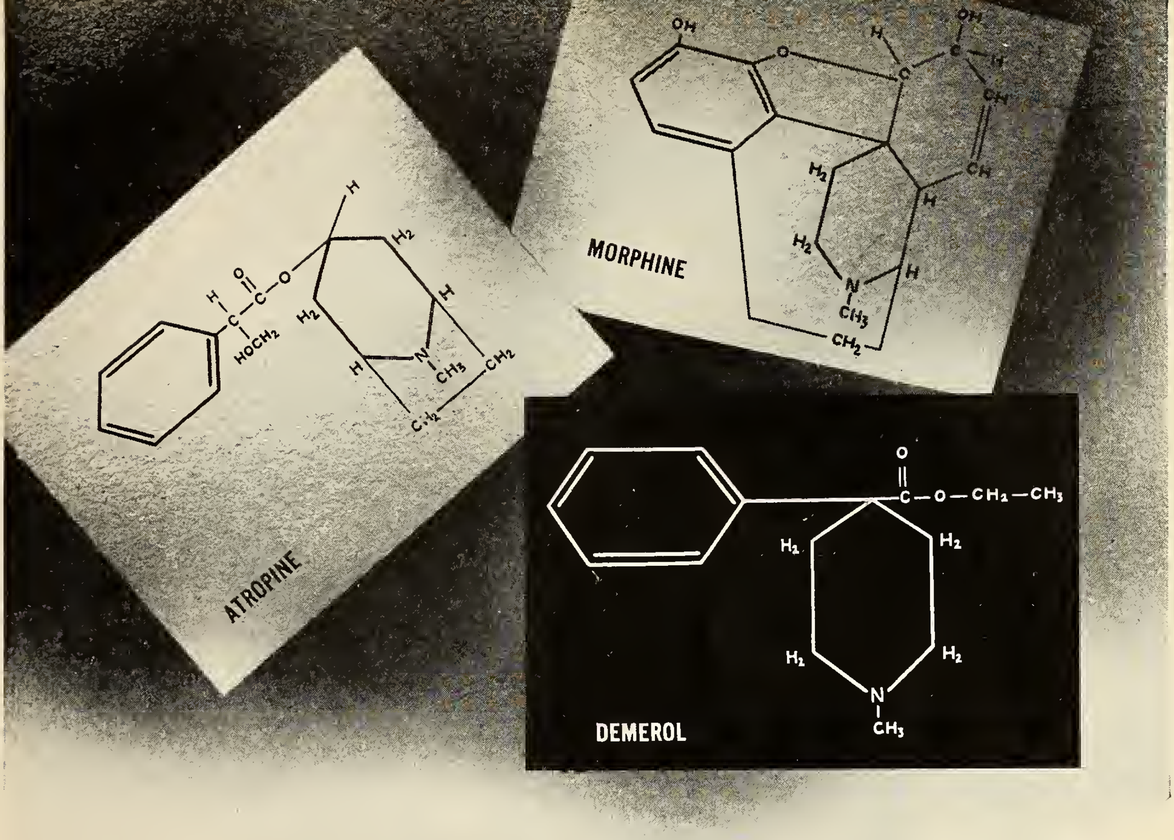

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THE RH FACTOR IN FEEBLE-MINDEDNESS AND OTHER DISEASES

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IN recent years much attention has been devoted to the study of the inheritance of various traits, both normal and abnormal, in human beings. Perhaps the most fascinating of these traits are the recently discovered Rh blood types. At first apparently of only theoretical and academic interest, the Rh factors have become of importance in legal medicine, in transfusions, and in the study of infant mortality, and are now extending their influence into the fields of psychology and psychiatry.

In order to understand the Rh factors and their applications, it is necessary to see them in perspective against the background of the human blood groups in general. And in order to understand the genetic and medical applications of the blood groups, it is in turn desirable to view them in perspective against the background of hereditary human traits and their importance in human welfare. Let me then briefly sketch in broad outline the practical applications of human heredity, adding a little more detail when we come to the blood groups, and finally giving very careful consideration to the Rh blood types.

The educated layman is rapidly learning that much information is now available on the mode of inheritance of specific traits in human beings, and he is responding to this awareness by asking questions of his physician, his visiting nurse, his pastor, and other social workers. It behooves those involved in social service to learn some of the answers, and to know where to obtain further information which they themselves may not possess. You in Minnesota are to be congratulated for having available the Charles Fremont Dight Institute for the Study of Human Genetics, which is serving admirably as a clearing house for such information, as well as in a research capacity.

One of the important practical applications of our increasing knowledge of human inheritance is our ability to give genetic advice to families. Parents and prospective parents are often concerned about the future appearance in their children of a trait which has previously occurred in the family. Sometimes it is a desirable trait such as musical ability, curly hair or high intelligence. Sometimes it is an unwanted trait such as diabetes, cleft palate or feeble-mindedness.

Before attempting to answer such a question the consultant must take several steps. He must first make sure of the accurate identification of the trait. This frequently means a medical diagnosis. The ease of identification or diagnosis varies: cleft palate is recognized with relative ease, borderline mental deficiency with considerable difficulty. Frequently, minor variations within a trait must be carefully noted, as they may represent genetic entities.

Having properly described and identified the trait, the second step is to chart the family history of the person seeking advice. This is essential in making an accurate prognosis. The third step is to compare this pedigree with those already re-

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corded in the literature or in the files of the consultant, noting the type of hereditary behavior previously assigned to the trait, and paying careful attention to variations in the expression of the trait, the age of onset, and the regularity with which the character has appeared.

Last, the potential effects of the environment on the trait must be reviewed, and the probable environment in which the trait will develop if it appears in this family must be specified.

With the foregoing information available it may be possible to give a reasonable estimate of the probability of the recurrence of the trait.

A few personal instances may be permissible as illustrations. I was recently consulted by a man who had suffered all his life from brittleness of bones, fractures occurring at the slightest provocation. The sclerotic coat of the eyeball was pale blue. His mother had had the same blue sclerotics, but with less marked tendency to fractures. He wished to marry, and wondered whether the trait might reappear. Since it is known to be transmitted as a dominant factor, it was necessary to inform him that he might expect the condition in about half his children, both boys and girls.

I was asked to advise a young couple who had lost their first child from the infantile form of amaurotic idiocy. This is a condition in which mental failure, paralysis, blindness and finally death occur in infancy. The diagnosis had been made by a competent physician. The mode of inheritance of this condition is known to be that of an autosomal recessive factor, unaffected by ordinary environmental influences, so that the parents were notified that the chances of another child having the disease were one in four. In this instance the parents felt that they were emotionally unable to stand another strain like that imposed by the slow death of the first child, and decided to adopt a child.

Very recently there appeared at the Ohio State University Hospital two brothers, aged nine and eleven, suffering from pseudohypertrophic muscular dystrophy. The parents had come to appreciate the hopeless outlook for the affected boys, but wanted particularly to know the chances that the condition would reappear if the normal brothers and sisters should marry. Since the dystrophy is the result of a sex-linked recessive factor, it was possible to advise them that the normal boys in the family could not possibly transmit the defective gene, but that the girls had an even chance of carrying it and thus of producing affected sons.

A short time ago I was asked to see a young couple who had a male infant suffering from a condition known as epidermolysis bullosa of the dystrophic type. In this form of the abnormality the skin becomes blistered wherever subjected to friction, the blisters occurring between the epidermis and the corium. They become malignant, and death usually occurs in infancy or childhood. The nails and teeth are affected, and the blisters occur in the mucous membranes as well as in the more usual places. The parents wanted information as to future children. This type of epidermolysis is due to an incompletely sex-linked gene, so that a still different prognosis must be made. Since the affected child was a boy, other affected children in this family are likely to be boys, although occasionally an affected girl might occur. With a known crossover value of twenty per cent for this trait, a girl in this family would have only one chance in ten of being affected, while another boy would have nearly one chance in two (four in ten) of having the epidermolysis.

The foregoing instances are all examples where sufficient information on the genetics of the trait was available to make accurate prognosis possible. In many diseases and abnormalities, accurate genetic data are not at hand and explicit information cannot be given. There is crying need for more and more research in medical genetics and human heredity.

One of the most important practical applications of our knowledge of human genetics is in the field of preventive medicine. It is becoming more and more feasible to prevent, in the relatives of persons with genetic conditions, the appearance of the abnormality or disease. It is done by instituting preventive measures, on the basis of the genetic history. The procedure is to examine the relatives of an affected patient for the early pre-clinical or laboratory signs of the trait, and then to take such precautions in those who show the signs as will minimize the danger. The preventive splenectomy in hemolytic icterus is a brilliant example of such procedures, and many others could be cited.

To take a personal instance, we were recently able to suggest such preventive measures in a family in which several members suffered from xanthoma tuberosum. This, like the amaurotic idiocy previously referred to, is a storage disease, a lipoidosis. In contrast to amaurotic idiocy, however, there are pre-clinical laboratory signs which may be discovered in time to prevent any fatal consequences. The visible signs of the abnormality are nodules and tumors of the joints and tendons. The hidden symptoms are increases in the blood cholesterol and cholesterol esters. In contrast to a normal blood cholesterol of 150-300 mg. per cent, the value in xanthoma may reach 1500 mg. per cent. The disease may progress to cardiovascular involvement with sudden death.

Since the increase in blood cholesterol is transmitted as a dominant factor, and since it may occur long before the appearance of the nodules and tumors, it is feasible to examine the relatives of patients with nodules by determining their blood cholesterol and cholesterol esters. Where hypercholesteremia is found, preventive dietary measures may be instituted, thus helping to preclude cardiovascular involvement and possible death.

Another important set of practical applications of human genetics occurs in medico-legal cases as a consequence of our knowledge of the human blood groups. In the early days of this century Karl Landsteiner discovered that when the red cells of one person were mixed with the serum of another person, a reaction sometimes occurred. The red cells were clumped, or agglutinated, by the serum. This did not happen in all mixtures of serums and cells, but only when the cells of certain persons were mixed with the serum of certain other persons. Landsteiner recognized that the reaction was that of antigen with antibody; that is, the red cells of some people contain an antigen, and the serum of some others contain the corresponding antibody. Upon mixture of the antigen and the antibody, agglutination results.

Further work by Landsteiner disclosed the fact that there were two such antigens in human blood, and these he named A and B. There are thus four kinds of people in the world: those containing antigen A in their cells (hence spoken of as belonging to group A), those containing antigen B (group B), those having both antigens (group AB), and those having neither antigen (group O).

There is a reciprocal relationship between the antigens and the antibodies in the A-B series, since everyone has either antigen A or the antibody against A, and everyone has either antigen B or the antibody against B. There are thus natural or "normal" antibodies against A and B available in the bloods of various individuals.

TABLE I. MAJOR LAWS PERTAINING TO MEDICO-LEGAL APPLICATIONS OF BLOOD GROUPS AND TYPES

1. Agglutinogen A, B, M, N, P, Rh or Hr cannot appear in a child unless it was present in one or both parents.
2. Water-soluble agglutinogen A or B (as opposed to alcohol soluble) cannot appear in a child unless one or both parents had the "secreting" ability.
3. A parent of group AB cannot give rise to a child of group O.
4. A parent of type O cannot give rise to a child of group AB.
5. A parent of type M cannot give rise to a child of type N.
6. A parent of type N cannot give rise to a child of type M.
7. A parent lacking a particular Rh agglutinogen cannot give rise to a child lacking the corresponding Hr agglutinogen.
8. A parent lacking a particular Hr agglutinogen cannot give rise to a child lacking the correspondeing Rh agglutinogen.

The first obvious importance of this discovery was to transfusion, since it would not do to give red cells to a person whose serum would immediately clump these cells. Hence in all transfusions the blood groups of donor and recipient must be determined, and compatible blood given.

The fact that there were four kinds of people who could be classified in this way was of immediate interest to the geneticist. In our own laboratory and those of other investigators researches were quickly undertaken to determine how the blood groups were inherited. The study of many thousands of families has made it clear that antigen A never appears in a child's blood unless it was in the blood of at least one of the parents. Similarly, antigen B never appears in a child's blood unless it was present in the blood of at least one of the parents. Other more complicated laws can also be stated, which need not be gone into in detail here (Table I).

Although these facts were at first merely of academic interest, they proved very quickly to be of practical importance. They may be used, for example, in cases of disputed parents. If a child, for instance, is of group B, and the mother is of group O, then we know that the child inherited antigen B from its father. If the alleged father should be of group O or of group A, we can say definitely that he is not the true father of the child.

Antigen A was later found to occur in three grades, so to speak. These have been namd A_1, A_2 and A_3. There are thus actually eight different groups in the A-B series, namely O, A_1, A_2, A_3, B, A_1B, A_2B, and A_3B.

You will recall that antigens A and B were discovered because of the presence in human serums of naturally occurring antibodies against them. In 1927 it occurred to Landsteiner and Levine that there might be still other antigens present in blood cells for which there were no normal antibodies. Such antigens might be discovered by injecting human red cells into animals, in which case the animals would produce antibodies against any specific antigens present in the cells. Accordingly they injected group O cells into rabbits, removed the heterologous antibodies, and discovered that the rabbits had produced specific antibodies against several antigens not previously recognized in human blood cells.

Two of these newly discovered antigens were named M and N. They were found to be related in such a way that a person might have one of them in his cells, or the other, or both. No one has been found who lacks both M and N. In inheritance studies, it was found in our laboratory and others that these antigens, like A and B, are dominant, and do not appear in a child's blood unless they were present in the blood of at least one of the parents. Like antigen A, antigen N comes in more than one grade. Thus N_1 and N_2 are recognized, and there are five types in the M-N series, as follows: M, N_1, N_2, MN_1, MN_2. Within the A-B series, it will be recalled, there were eight kinds. Since any one of those eight could be any one of the five M-N types, there are 8 x 5, or 40 different groups in these two series taken together.

Not only do antigens M and N lack normal antibodies, but they are only very weakly antigenic to human beings. Hence they are of no importance in transfusions, since even multiple injections of M into a person lacking it, or of N into a person lacking it, will not produce strong antibodies, such are produced by injection into rabbits. The chief importance of antigens M and N is in their medicolegal applications, in disputed paternity cases (Table I).

Another antigen was found in the course of the foregoing studies of Landsteiner and Levine. This antigen was named P, and is inherited independently of antigens M and N. It is less satisfactory to use in medicolegal studies than the other antigens, since potent sera are difficult to obtain and standardize, and the reactions are graded. Certain normal animal sera have been found to be fairly good sources of anti-P, particularly pig serum. Like the previously mentioned antigens, P does not occur in a child's blood unless it was present in the blood of at least one of the parents. Moreover, P also appears to occur in two grades, P_1 and P_2, so that four kinds of persons can be classified when proper antisera are available, namely, P_1, P_2, P_1P_2, and P—.

It will be recalled that in the combined A-B and M-N series there were 40 different types of human blood. Since any one of the 40 could be any one of the 4 types in the P series, there are altogether 40 x 4, or 160 types, using all the antigens so far discussed.

In the years between 1930 and 1933 various investigators demonstrated that antigens A and B occur in two main chemical forms: alcohol-soluble and water-soluble. Thus persons of groups A, B, and AB may develop water-soluble antigens, in which case the group-specific substance is found in the body fluids (saliva, tears, urine, milk, etc.) as well as in the cells. Or they may develop alcohol-soluble antigens, in which case the group-specific substance is restricted to the blood cells and tissue cells. Schiff and his coworkers have designated those persons having water-soluble antigens as "secretors," those having alcohol-soluble antigens as "non-secretors." By means of special techniques even individuals of group 0 can be classified into secretors and non-secretors.

The water-solubility of antigens A and B, that is to say, the "secreting" ability, is inherited on the basis of a dominant factor. When both parents are non-secretors, all the children are non-secretors. These factors may thus be added to these previously used in medicolegal applications (Table I). In addition, they double the number of recognizable blood types. Using antigens A, B, M, N and P, we have already classified 160 types. Since any one of these 160 types could be S+ (secretor) or S— (non-secretor), there would be 160 x 2, or 320 types thus far classifiable.

We have now set the stage for the discussion of the Rh blood types, which fit into the picture at this point.

Further attempts at discovering still more human blood antigens by injection of human blood into animals gave disappointing results. Landsteiner and Wiener therefore tried a somewhat different approach. In 1940 they injected blood from the monkey, *Macacus rhesus*, into rabbits. The rabbits responded by producing an antibody against rhesus blood. When this antibody was tested against human blood, it was found to agglutinate the cells of about 85 per cent of white individuals. Thus 85 per cent of us share an antigen in common with rhesus monkeys, and 15 per cent of us do not. This antigen is different from A, B, M, N or P. Using the first two letters of "rhesus," the antigen was named Rh. Persons having the new antigen were designated Rh positive (Rh+), while those not having it were designated Rh negative (Rh—).

TABLE II. HUMAN BLOOD GROUPS

System	Groups	Classes
A-B-O	O, A_1 A_2, A_3, B, A_1B, A_2B, A_3B	8
MN	M, N_1, N_2, MN_1, MN_2	5
P	P_1, P_2, P_1P_2, P–	4
S	S+, S–	2
Rh	Rh°, $\mathrm{Rh}^{\circ\prime}$, $\mathrm{Rh}^{\circ\prime\prime}$, $\mathrm{Rh}^{\circ\prime}\mathrm{Rh}^{\circ\prime\prime}$, $\mathrm{Rh}^{\prime}$, $\mathrm{Rh}^{\prime\prime}$, $\mathrm{Rh}^{\prime}\mathrm{Rh}^{\prime\prime}$, Rh–	8

8 × 5 × 4 × 2 × 8 = 2,560

Studies on the inheritance of the Rh antigen showed that it too was inherited as a dominant factor, and that it never appeared in a child's blood unless it was present in the blood of at least one of the parents. It therefore takes its place with the other antigens in medico-legal applications (Table I).

There are no normal antibodies against antigen Rh in human serums. In this respect the situation is similar to that in regard to M and N. Unlike antigens M and N, however, Rh is highly antigenic to human beings. Repeated injection of Rh+ blood into an Rh— person results in immunization of the recipient, and transfusion reactions of increasing severity. It is essential, therefore, to transfuse Rh— blood into an Rh— person. For even though the first transfusion might cause no reaction, the immunization process would be initiated, and a subsequent transfusion might be fatal. While only a small proportion of transfusions in civilian practice is made up of multiple transfusions, this proportion rises in military medicine to 80 per cent.

The Rh antigen has another unique property. It is capable of passing from the fetal circulation through the placenta into the maternal circulation. This fact led to another important discovery, namely, the cause of the disease known as erythroblastosis.

Erythroblastosis is a disease of the fetus or newborn infant, characterized by anemia, jaundice, congenital hydrops, and sometimes stillborn macerated fetuses. In 1939 Levine and Stetson studied the blood of a mother who harbored a macerated fetus, and found that it contained an atypical antibody. They postulated that the mother had been immunized by her own fetus, and the resulting antibody had caused the destruction of the fetus. The following year Landsteiner and Wiener announced the discovery of the Rh factor, and this quickly proved to be the agent postulated by Levine and Stetson.

Levine, Katzin and Burnham in 1941 showed that the Rh antigen was indeed the primary cause of erythroblastosis fetalis. In nearly all cases of the disease, the mother proved to be Rh—, the fetus Rh+. The Rh antigen in the fetus was, of course, inherited from the father. The Rh— mothers can be shown to have developed antibodies against Rh. Apparently the Rh antigen has passed through the placenta into the circulation of the mother, immunized the mother, and the maternal immune antibody has then passed back into the fetus, damaging the red blood cells. The result is hemolytic jaundice and other effects. While the test-tube reaction is agglutination, the end result in the fetal circulation is hemolysis. The regenerative activity of the fetal blood-forming system floods the circulation with immature red cells (erythroblasts), hence the name erythroblastosis.

Ordinarily the first Rh+ child born to an Rh— mother is itself unaffected, since the production of antibodies by the mother has not reached a high titer by the time of the birth of the infant. A second Rh+ embryo, however, stimulates the further rapid production of antibodies, and this and all subsequent Rh+ fetuses will be affected. Occasionally a woman produces antibodies so readily that even the first Rh+ embryo may be affected. Of course if an Rh— woman has received a transfusion of Rh+ blood previous to her first pregnancy, she will already have been immunized, and the first Rh+ fetus she carries can be affected by the antibodies.

On the other hand, some women produce antibodies so slowly that several Rh+ fetuses may be required before one becomes erythroblastotic.

Although anti-Rh serum was originally obtained from rabbits immunized with rhesus monkey blood, and later from immunized guinea pigs, it was soon found that the serum from mothers of erythroblastotic infants was a much better source of test antibodies than serum from immunized animals. Such mothers are the present source of test serums. In studying human serums from immunized mothers, several new kinds of anti-Rh antibodies have been discovered, making it possible to identify corresponding new kinds of Rh antigens.

Shortly after the description of the original Rh antibody, Wiener found a human serum which agglutinated only 70 per cent of human bloods, but which was related to the original anti-Rh serum, since bloods negative to the one were usually negative to the other. The original antigen is now called Rh° (or Rh_0), and the new one is called Rh′. Levine then found a serum which agglutinated about 87 per cent of human bloods, and obviously contained both antibodies, that against Rh° and that against Rh′. Some persons are found to have Rh° in their red cells, and some to have Rh′. In addition, some persons have both, and this may be the result of their inheriting two genetic factors, one for each antigen, or of their inheriting a single genetic factor (*Rh°′*) accounting for both.

Still later Wiener discovered a third type of human antiserum which reacted with but 32 per cent of human bloods. The antigen corresponding to this antibody was named Rh″. Using the three antiserums, eight kinds of people may be distinguished, as follows: Rh°, Rh′, Rh″, Rh°′, Rh°″, Rh′Rh″, Rh°′ Rh°″, and Rh—. The first seven of these eight types are Rh+ for one or more of the Rh antigens; the last one is Rh negative.

We had already distinguished 320 kinds of people based on A, B, M, N, P and S. Since any one of the 320 could be any one of the eight Rh types, we can now distinguish 320x8, or 2,560 types, using all the known factors (Table II). Of course some of the types are far commoner than others in the population, and some of the antiserums are difficult to obtain in standard form. Nevertheless, with the proper antiserums it would be possible to take a small sample of blood from each one of you in the audience, and in a short time to place each of you in your own blood type. It would be surprising if any two of you were in the same type. Ten years from now it would be possible to take another sample of blood from each of you, and without having the samples individually named, to assign each blood to a specific person by referring to the previously recorded data, except for such duplications of type as might exist among you.

Using all the Rh factors, 87 per cent of American whites are Rh+ and only 13 per cent are Rh—. Taking these figures, we may compute how often Rh— women will marry Rh+ men by chance in the general population, and how often such marriages should result in Rh+ children, who might thus have erythroblastosis. Let us for this purpose consider all the Rh antigens collectively, as Rh+, contrasted with Rh—, in which none of the antigens is present. Since hereditary factors occur in pairs in an individual, an Rh+ man might be *RhRh* or *Rhrh*. In the first instance he is said to be pure or homozygous for the Rh factor, and can transmit only the factor for the antigen to his children. In the second instance (*Rhrh*), he is hybrid, or heterozygous, and will transmit the factor for the Rh antigen to only half his children. Rh— women are all homozygous *rhrh*.

By appropriate statistical methods of gene-frequency analysis, we can show that in the general population 41 per cent are *RhRh*, 46 per cent are *Rhrh*, and 13 per cent are *rhrh*. Thus Rh— women will marry Rh+ men in 11.3 per cent of all matings. But 5.33 per cent (13 per cent of 41 per cent) will be with homozygous men, and 5.98 per cent (13 per cent of 46 per cent) will be with heterozygous men. All the offspring from homozygous men will be Rh+, but only half of those from heterozygous men will be Rh+. Therefore 5.33 per cent + ½ of 5.98 per cent of all children born will be Rh+ children from Rh— mothers. This figure is 8.32 per cent. We should expect to find erythroblastosis, then, in 8.32 per cent of all births, that is, about one in twelve. However, the frequency of clinically diagnosed cases has never approached this figure. The recorded incidence is about one half of one per cent; or about one in 200 births. Why does this discrepancy between the calculated and the observed proportions occur?

First of all it must be remembered that firstborn children are seldom if ever affected. In the American population, the average number of children in families having at least one child is 3.24. This means that one out of 3.24, or about 31 per cent of children born in this country, are firstborn. This reduces the expected proportion of children showing the effects of the immunization of the mother by the Rh factor to 5.74 per cent. Thus we would expect only about one in seventeen to show the effects. This closes somewhat the gap between expected (1 in 17) and observed (1 in 200), but still leaves a considerable discrepancy.

The cases of erythroblastosis are not distributed at random among the potential Rh— mothers, but usually occur several in the family. It may be, then, that only some women are capable of producing potent antibodies against the Rh antigens. It may also be true that the antigen gets through the placenta only in some Rh— mothers. Perhaps both of these phenomena account for some of the discrepancy between calculated and observed incidences of erythroblastosis.

It is also conceivable, however, that in some instances where the antigen penetrates the placental barrier, and the antibodies in turn reach the fetal circulation, that the effects on the fetus are different from those recognized as classical erythroblastosis.

In various laboratories, including our own, the search has been made for such manifestations. The effects of Rh immunization appear to be unimportant in the production of early abortions, and in the etiology of hemolytic icterus, sickle cell anemia, hydatiform mole, ectopic pregnancies, eclampsia and specific toxemia.

In 1944, Yannett and Lieberman made an examination of the blood groups and types of the children in a school for the feeble-minded, and of their mothers. There were too many Rh— mothers in the group, and too many Rh+ children of Rh— mothers. Breaking down the results it was found that of 109 feeble-minded children, fifty-three were distributed among the specific types of mental deficiency such as Mongolian idiocy and spastic paraplegia. The distribution of the Rh factor was normal in these children and in their mothers.

In the fifty-six children classified as undifferentiated mental deficiency, however, an abnormal distribution of the Rh factor was found. There were too many Rh— mothers and too many Rh+ children from these Rh— mothers.

These results appeared to us so suggestive that we have been investigating the blood of the undifferentiated feeble-minded at the Ohio Institution for the Feeble-minded, and of their mothers (Snyder, Schonfield and Offerman, 1945). The complete results up to date are as follows: Of 169 mothers of feeble-minded children, thirty-eight are Rh—, whereas only twenty-one or twenty-two would be expected. This difference is statistically highly significant. Of 171 feeble-minded children, twenty-seven are Rh+ from Rh— mothers, whereas we should expect only fourteen. This deviation is also highly significant when tested statistically.

Thus it would seem that in some instances the immune antibodies of the mother produce effects on the brain tissue instead of the usual effects recognized as erythroblastosis. It has been suggested that the immediate effect of red-cell destruction is anoxia, and that this lack of oxygen, if it occurs at a time when the brain of the embryo is in a critical stage of development, may very well cause permanent mental deficiency.

Thus the gap between the calculated incidence of effects of Rh immunization and the observed incidence has been partially closed up. However, the search must continue for further, as yet unknown, manifestations. In our laboratory we have recently completed an analysis of a large number of cases of dementia praecox and their mothers. The distribution of the Rh factors is perfectly normal in these instances.

It might seem surprising that heterospecific pregnancies in regard to antigens A and B play no part in erythroblastosis, since antibodies against A and B are normally present in bloods lacking these antigens, and would not even have to be stimulated by immunization. The explanation seems to be that antigens A and B, at least in secretors, are found in all tissue cells and body fluids, including the amniotic fluid and secretions of the fetus. This may serve to protect the fetus from antibodies against A and B. On the other hand, antigen Rh seems to be restricted to the red cells, and such a protective mechanism cannot operate. There is, however, some evidence that incompatibility of A and B can cause mild symptoms in cases where the fetus has one of these antigens which is lacking in the mother. Mild

TABLE III. GENETIC BASIS OF THE RH BLOOD TYPES, SHOWING REACTION OF EACH TO RH AND HR ANTISERA.
(Frequencies given are for American Whites)

Types	Frequency	Genotypes	Anti Rh° .85	Anti Rh′ .70	Anti Rh″ .32	Anti Hr° .63	Anti Hr′ .80	Anti Hr″ .97
Rh°	.02	Rh°Rh°	+	—	—	—	+	+
		Rh°rh	+	—	—	+	+	+
Rh°′	.52	Rh°′Rh°′	+	+	—	—	—	+
		Rh°Rh′	+	+	—	+	—	+
		Rh°′Rh°	+	+	—	—	+	+
		Rh°′rh	+	+	—	+	+	+
		Rh°′Rh′	+	+	—	+	+	+
Rh°″	.16	Rh°″Rh°″	+	—	+	—	+	—
		Rh°″Rh″	+	—	+	+	+	—
		Rh°″Rh°	+	—	+	—	+	+
		Rh°″rh	+	—	+	+	+	+
		Rh°Rh″	+	—	+	+	+	+
Rh°′Rh°″	.15	Rh°′Rh°″	+	+	+	—	+	+
		Rh°′Rh″	+	+	+	+	+	+
		Rh°″Rh′	+	+	+	+	+	+
Rh′	.015	Rh′Rh′	—	+	—	+	—	+
		Rh′rh	—	+	—	+	+	+
Rh″	.005	Rh″Rh″	—	—	+	+	+	—
		Rh″rh	—	—	+	+	+	+
Rh′Rh″	.—	Rh′Rh″	—	+	+	+	+	+
Rh–	.13	rhrh	—	—	—	+	+	+

Rh° also called standard Rh
Rh°′ also called Rh_1
Rh°″ also called Rh_2

jaundice of group A infants from group O mothers has been reported by Polayes (1944). In these cases the titer of anti-A antibodies was found to be 1:700 as compared with an average of less than 1:200.

At first glance it might appear that the death of erythroblastotic infants is gradually eliminating the *Rh* factor. Actually it is the other way around, and the *rh* factor is being eliminated instead. This is due to the fact that every erythroblastotic infant is heterozygous, *Rhrh,* so that each death removes equal numbers of the two genes. Since there are far more *Rh* genes than *rh* genes in the world, a larger proportion of the *rh* genes is lost each time.

The mechanism of the immunization of the mother has been discussed by various workers (cf. Levine 1944). It is assumed that in every normal pregnancy minute quantities of blood from the fetus may find their way into the maternal circulation through microscopic breaks in the villi of the placenta. Very small amounts of blood are necessary for immunization. When it is realized that the total area of villi exposed in the placenta to the maternal circulation is 70 square feet, and that these villi, if extended in a straight line, would reach eleven miles (Dodds 1922), it is not hard to imagine the availability of microscopic amounts of fetal blood to the mother.

The feeble-mindedness due to Rh incompatibility is an acquired mental deficiency, and cannot of course be transmitted to offspring. It could thus account for some of the isolated cases of undifferentiated feeble-mindedness in otherwise highly intelligent families, and also for some of the instances where two feeble-minded parents have produced normal offspring. Perhaps not more than 10 per cent of all undifferentiated mental deficiency can be attributed to Rh incompatibility. The mere fact that it occurs, however, means that when an Rh— girl marries an Rh+ man, she is exposing herself not only to the risk of stillborn or erythroblastotic children, but of mentally deficient children as well.

While these facts are not cause for undue alarm, it would seem advisable that every girl, on entering into marriage, should learn her Rh type and that of her husband. If she is Rh+ (as seven out of eight will be) she has nothing to worry about. If she is Rh— and marries an Rh— man, she still has no cause for worry. But if she is Rh— and marries an Rh+ man, she should inform her family physician of this fact, so that he may take all available precautions for the preservation of any Rh+ infant she might have.

Recent discoveries have brought both new dangers and new hopes. I refer to the newly described Hr factors (Hr is Rh in reverse). Once in a great while an Rh+ mother has an erythroblastic child. The danger is very small indeed, but the hopes aroused by this discovery are great. In these cases the effect is that of the Hr factor. The Hr factor is reciprocally related to the Rh factor. Corresponding to the three Rh antigens, Rh°, Rh′ and Rh″, three Hr antigens, Hr°, Hr′ and Hr″ are postulated. Two of these, Hr′ and Hr″ have been discovered and described; the third will no doubt soon be found. The reactions of the blood types with Rh and Hr antiserums are shown in Table III.

The rare cases of an erythroblastotic child born to an Rh+ mother are cases where the mother is Hr— and the child is Hr+. The Hr— mother and the Hr+ child must both be Rh+, since as shown by the table an Hr— mother cannot be heterozygous for *rh*. The father may be of any Rh type, since Hr+ individuals occur in all Rh blood types.

The hopes aroused by this new discovery are that by the use of anti-Hr serums we may be able to pick out, in some instances at least, heterozygous Rh+ men. This would be of value because such men, when married to Rh— women, could expect half their children to be Rh— and therefore free from effects of the incompatibility, whereas homozygous Rh+ men cannot produce Rh— offspring.

Using antigen Hr′, there are ten kinds of Rh types instead of eight, as may be seen from Table III. There would thus be 3,200 different types classifiable instead of 2,560. Using all three Hr antigens when they become available, we shall have eighteen Rh types, and thus 5,760 blood types altogether. Looking into the future, the final result staggers the imagination. The specificity of human blood is a fascinating subject for research.

The Hr antigens are very new to us as yet, and are at present only partially understood. It is obvious that much detailed research work remains to be done on this and other phases of the problem. Basic research in chemistry, physics, biology and medicine will all contribute to its solution. The problems involved are primarily problems of medical genetics, however, and can be solved only by those trained in medicine and in genetics, working in co-operation. May I take this opportunity to point out the very valuable potentialities of integrated groups like those working at the Dight Institute, and may I urge you all to give your fullest support to such programs of research and education as they are carrying out.

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MASS X-RAY SURVEYS

The results of mass x-ray surveys in discovering unsuspected tuberculosis in apparently healthy persons lead one to the logical assumption that just as much, and probably more, tuberculosis might be found through routine roentgenological examination of patients admitted to our general hospitals and clinics. The Mayo Clinic has had such a program for a number of years. At the University of Chicago Hospital and Clinics where this procedure has been followed since 1939, 1.43 per cent of those examined have shown clinically significant tuberculosis. In addition, a large number of nontuberculous chest conditions were found. The most important among these were malignant neoplasms and cardiovascular disease. The over-all percentage of pathological findings was 21.2 per cent.—Karl H. Pfuetze, M.D., Med. Dir. & Supt., Mineral Springs San., Cannon Falls, Minn.

SEROLOGY AND OBSTETRICS

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THE purpose of this paper is to discuss the accumulating obstetrical serologic evidence that suggests: that the definition of the A, B, and Rh antigens as merely agglutinogens is inadequate; that in humans their essential property is that of toxins when they can gain access to a host that does not possess them by inheritance; that in the manifestations of pregnancy toxemia we are witnessing the effects in the host of one or more of these toxins, whereas in erythroblastosis and some fetal deaths and abortions, we are witnessing the effects of corresponding specific antitoxins, generated or inherited by the host.

Though an obstetrical topic, the practical bearing of the evidence on the problems of safe blood transfusion is of importance to all.

Clinical and pathological data have increasingly converged in proof upon the fetal toxin hypothesis of pregnancy toxemia. Data have been furnished by Veit, in 1902; Dienst, in 1905; James Young, in 1914; McQuarrie, in 1923; Ottenberg; and Bartholomew and Colvin; to name but a few investigators. These data, though raising the probability of the fetal toxin hypothesis was not conclusive evidence. To be conclusive, a clearly identifiable toxic substance or antigen must be demonstrated in the fetus, and a corresponding antitoxin or antibody in the mother, and a functional relationship between them must be demonstrable, precisely as obtains in bacterial toxemia or snake venom poisoning.

The serological approach to the pregnancy toxemia problem was unsatisfactory until Jonsson, in 1936, showed that by titering the maternal group antibodies one could often predict the group of the child by the rise above average of the titer of the maternal antibody involved. For example, in a group O mother, with a group B husband, if the B antibody titer rises above average, it allows one to predict with fair accuracy the B status of the child. It has been in such cases where the maternal antibody titer rises that the obstetrician has been finding the manifestations of toxemia. One logical interpretation is that the rise of the titer is a manifestation of an antitoxin response to its corresponding toxin. This seemed like valid reasoning, but how could one account for the cases of toxemia in which no A or B incompatibility existed between child and mother? This had been an insistent question since the beginning of this work in 1919. Possibly the toxin was more fundamental than could be demonstrated by blood group incompatibility. Possibly men were correct in maintaining that the A and B substances were merely agglutinogens and non-toxic antigens. To throw some additional light on the problem, a maternal skin test was devised for toxemics, which, like the Mantoux test for tuberculosis, was interpreted as showing that whatever the nature of the toxin, a toxin existed, and in pregnancy toxemia the mother was immunized to that particular toxin. It seemed to aid in the proof of the toxin hypothesis, but it in no way identified the toxin and could only be used after the birth of the child.

Then came the discovery of the so-called Rh factor by Landsteiner and Wiener, followed shortly by the work of Levine, Katzin and Burnham, showing the relationship between this factor and erythroblastosis fetalis, abortions, stillbirths and macerated fetuses. To the investigator of the toxemias of pregnancy, these discoveries took on a much wider significance than was manifest in their obvious importance in blood transfusion and erythroblastosis. The discovery of the Rh factor furnished a possible answer to the insistent question above referred to, and the work on erythroblastosis furnished further evidence in the fetal toxin argument by completing the missing arc of the circle of the classical and accepted toxin-antitoxin mechanism. If the incompatible fetus, which is a colony of genetically regimented cells, each containing a toxin specific to that mother, could suffer injury and death from the mother's specific antitoxin, then it would be unreasonable to support a belief that the maternal organism could emerge without showing signs of injury. The maternal manifestations must be ascribed to the action of the

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toxin, as in bacterial or snake venom poisoning. At first, the Rh factor held the field, but it soon became apparent that the A and B antigens could bring about erythroblastotic injury and disaster where the Rh status of the husband and wife were similar. All this data irresistibly leads the obstetrician to the conclusion that the only adequate definition of the A, B, and Rh antigens must be that they are toxins. That is their essential property. The relationship of the fetus to its mother is a toxin-antitoxin relationship, when the fetus possesses one or more of these toxins and the mother does not. The results depend upon whether these toxins can gain access to the mother, the amount of the insult, and the reactive properties of the maternal organism.

At first it was perplexing to note that only about 30 per cent of the erythroblastosis cases showed gross signs of pregnancy toxemia. If only 30 per cent showed signs of toxemia and 70 per cent did not, perhaps the men were correct who ascribed all the manifestations of toxemia to the cardio-vascular-renal setup. The advocates of the fetal toxin hypothesis had always held that the cardio-vascular-renal setup played the role of the soil upon which the toxic pregnancy was implanted. It functioned as a conditioning agent but not as a cause. Were we overlooking subclinical toxemia in the missing 70 per cent? It suggested itself that the same law might function here as in snake venom poisoning, namely, that, all things being equal, the manifestations of poisoning in the host vary directly with the strength and amount of the toxin, and indirectly with the strength and amount of the antitoxin generated in the host, or given artificially. A study of maternal antibody titers in the past five years is highly suggestive of the similar functioning of this very law. If one will follow the specific antibody involved in any toxemia, one will see that when the titer remains comparatively low, the manifestations of toxemia are the most severe. After delivery, upon separation of the fetus with its antibody absorptive power, the maternal antibody titer will jump to many times its antepartum strength, with a rapid subsidence of the toxic manifestations. The highest jumps occur in cases of erythroblastosis in which the mother has shown no evidence of toxemia. The interpretation here is that the antibody or antitoxin absorptive power of the fetus keeps the maternal antibody titer comparatively low, but high enough to protect the mother and yet it is high enough to injure or kill the fetus.

Antibody studies suggest that a toxin-antitoxin basis forms the link between late toxemia and premature separation of the placenta. This basis furnishes the only reasonable explanation for certain types of onset and for some of the bizarre findings at times exhibited where for any reason the abdomen has been opened in cases of toxemia or premature separation. One of the interesting features of this serologic approach is that you can check back for years over your outstanding cases if the mothers and children are available.

The following of antibody titers also brings out another suggestive finding. A titer will run along on a virtual level, when, with the accession of an acute infection, the titer will jump from ten to twenty times its former strength, remain there during the infection, and then return to its preinfection level. This finding furnishes one rational explanation for the 40 to 50 per cent correlation between severe infection and death of the fetus and abortion. Although fetal red cells, as shown by Kemp, are five times less vulnerable to antibody agglutination than are adult cells (and one should thus be able to predicate logically that all the fetal cells are in this proportion protected from the deleterious effects of any antibody) if, by infection, any antibody strength were disproportionately raised, the possible results to the fetus would be obvious. Clinical observation suggests that not alone by direct action is the fetus killed by the maternal antitoxin, but indirectly through placental infarction. The placenta is the first line of defense in the toxin-antitoxin battle, and it would appear that infarction is a consequence of toxin-antitoxin action. This would explain the high correlation between the finding of gross infarction and late toxemia, and, in relation to infection, the finding of outstanding infarcts that it has been claimed can be estimated as having taken place during the time of the infection.

It would seem that in the light of present-day serologic and obstetrical data, the A, B, and Rh antigens must be redefined as toxins. When any one or more of these toxins reside in the fetus and can gain access to a mother not possessing them, the symptoms, signs and pathology of pregnancy toxemia supervene. The outcome depends upon the toxicity of the antigen and the reactive properties of the mother. The anatomic structure of the attachment of the fetus to the mother is such that at times a slight blood spill from fetus to mother can take place. When and if this occurs, the property of the antigen as an agglutinogen tends to bring about placental infarction and a sealing of the leak. Any clumping of the comparatively few fetal red blood cells in the maternal blood stream is merely a harbinger of approaching death and dissolution of the fetal cells under antitoxin attack, as obtains with bacteria. The disintegration of the fetal red cells merely increases the toxic content already in the serum. At no time is the picture similar to gross transfusion or to the experiments that conditioned the original definition of the A and B antigens. In the gross transfusion of incompatible blood, the A, B, or Rh antigens involved likely act as toxins as in pregnancy toxemia, but massive agglutination and other hemolytic processes kill the patient before this toxic action can manifest itself. The autopsy manifestations of the toxic action are obscured by the gross agglutination and breaking down of the transfused cells. In pregnancy toxemia, on the other hand, the autopsy findings give a clear picture of the effects of the toxin working over comparatively longer periods of time.

Our time limit on papers does not permit a consideration of the practical application of this material in the management of pregnancy toxemia or erythroblastosis, but it does permit a most important reference to the demands of safe blood transfusion, and the demands of protecting the childbearing possibilities of some women.

If a women is Rh negative, we must always consider the possibility of isoimmunization in even the first transfusion, if she is pregnant or has ever been pregnant. More important still is the responsibility resting upon us all to use Rh similar blood in the transfusion of all females to prevent the possible consequences of isoimmunization. It has been studiously estimated that transfusion is ten times more likely to isoimmunize a woman than is a pregnancy. Failure to follow this injunction may, at any time before menopause, destroy a woman's future ability to bear viable children. The frequency of transfusion is increasing by leaps and bounds in the interests of therapy, and in the fulfillment of these interests its use, as yet, comes far from having reached the saturation point.

The titer data upon which this paper is largely founded resulted from a determined effort on the part of many obstetricians, pediatricians, and general practitioners in the Middle Northwest to solve the problems involved in erythroblastosis fetalis, and safe blood transfusion. As a result, with the serologic aid of Dr. R. W. Koucky, a large pool of antibody titer findings has been formed. This pool of findings has been kept continously open by Dr. Koucky to the inspection of all. Throughout, he has been deserving of the thanks of all involved in giving unstintingly of his serologic experience and advice. The interpretations of the data are those of an obstetrician and, if incorrect, must not be attributed to him.

Conclusions

Genetics decrees that the relationship between fetus and mother is a toxin-antitoxin relationship if the fetus contains toxic antigens not possessed by the mother.

Three of the now known and lettered antigens, namely the A, B, and Rh antigens are, by adequate definition, toxins, when functioning under the above conditions.

In nature, their functioning as agglutinogens marks the beginning of demise and disintegration of the fetal red cells under antitoxin attacks as obtains with bacteria. The liberation of the toxins from the red cells merely augments the strength of the toxins already in the serum.

The symptoms, signs and pathological findings in pregnancy toxemia are caused by one or more of the three blood substances: A, B, and Rh. There may be others, yet unknown.

In erythroblastosis fetalis we are witnessing the destructive action of the antitoxin on the cells from which the toxin arose.

One of the functions of the placenta is to act as a first line of defense in the toxin-antitoxin battle. Due to its anatomic structure, this line of defense is at times broken down, with consequent spilling of fetal serum and red blood cells into the maternal circulation. It would seem that placental infarcts mark the points of leakage, due to the functional capacity of the agglutinin in the antitoxin working upon the agglutinogen in the fetal red blood cells.

(Continued on Page 170)

THE BEDSIDE DIAGNOSIS OF LIVER DISEASE

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IN dealing with patients with obvious liver disease (jaundice or hepatomegaly or similar evidences) the diagnosis can frequently be made at the bedside by the simple expedient of a careful history and physical examination. Furthermore, it is fair to say that a careful history of the illness and a physical examination of the patient must precede all other procedures in the diagnosis of liver disease.

The history should include an orderly inventory of the following facts with complete details of each positive finding. The character, location, radiation and duration of pain and time relationship to meals, relationship to fatty and fried foods, association with jaundice, and association with nausea and vomiting adequately describe one of the most important symptoms. The absence of pain is important, too. The onset, duration, and fluctuation of jaundice and its association with pruritus, relation to the color of the urine and feces, to pain, to the use of toxic drugs such as sulfanilamide, cincophen, dinitrophenol and arsenicals, or to exposure to carbon tetrachloride and trinitrotoluene, characterize the other one of the most important items of the history. The occurrence of the prodromal symptoms anorexia, fever, chills, nausea and vomiting and occurrence of an epidemic of jaundice in the neighborhood are of particular significance in the diagnosis of epidemic hepatitis. Previous plasma or blood transfusions or the use of homologous serum may antedate the onset of hepatitis by thirty to ninety days. A family history of intermittent or persistent jaundice and anemia in many members signifies familial hemolytic anemia in all probability. The amount and duration of the use of alcoholic beverages is important in ascertaining the etiology of hepatic cirrhosis. Intimately related to the alcohol consumption is the question of adequacy of the diet in the past during alcoholic debauches. The occurrence in the recent or remote past of such illnesses as malaria, typhoid, brucellosis, syphilis (and its treatment with arsenicals), amebiasis, and chronic ulcerative colitis may furnish a clue to the etiology of liver disease or of gallstones. As a cause of upper gastro-intestinal hemorrhage bleeding from esophageal varices is common, second in importance only to peptic ulcer. Edema, ascites, weight loss, anorexia and asthenia are common symptoms in advanced cirrhosis.

There are certain features of the physical examination which are of crucial importance in the diagnosis. The appearance of the jaundice and its intensity, the presence of absence of a green tint (or biliverdin icterus), and evidence of pruritus are easily detected by careful inspection of the whole body in good natural light. Considerable jaundice may be overlooked by examination in poor artificial light. The presence of spider nevi over the upper half of the body may be an important clue in the diagnosis of cirrhosis. Spider nevi are small arteriolar hemangiomata with a central pulsating punctum and radial striations extending a few millimeters to as much as a centimeter from the center giving the appearance of a spider. Sometimes the patient is aware of their presence and can tell when each one has appeared, but more often he is ignorant of their presence. They are easily overlooked unless a special search is made for them. Their presence does not establish the diagnosis, but characteristic nevi are presumptive evidence of hepatic cirrhosis. They may occur in normal individuals, during normal pregnancy or diseases of non-hepatic origin. They must be differentiated from the bright red telangiectases without radiations occurring normally over the trunk of adults. Palmar erythema commonly occurs in patients with cirrhosis and nutritional disorders.

The breath of a patient with jaundice should be carefully noted each day. When liver necrosis occurs, there is a characteristic odor termed fetor hepatis or amine odor. It is an aromatic, pungent, sweet odor, which may become so prominent that it pervades the whole room; on the other hand it may be detected only by smelling of the breath directly.

If a patient with jaundice from hepatitis is fasted for a relatively short period of time, hypo-

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glycemic episodes may occur with any or all of the symptomatology of an insulin reaction. Stupor, delirium or actual coma may develop independently of hypoglycemia and are of very grave prognostic significance, for there are few patients who recover after becoming comatose. The abdominal examination offers certain helpful and occasionally absolutely diagnostic signs. The presence of ascites is not difficult to elicit when a moderately large amount of fluid is present in the abdominal cavity. The most sensitive index of free fluid is the presence of shifting dullness, i.e. with dullness to percussion over the dependent parts of the abdomen regardless of position. When enough fluid is present, it is possible to identify solid masses by the maneuver of "dipping"; a sudden but, nevertheless, gentle dipping with the fingers of one hand at the level of dullness will give a sensation of splashing fluid against a solid mass whenever one is present. The phenomenon is evidence for free fluid as well as for a tumor mass. Of course, there are many causes for ascites, but one of the most important causes is liver disease and especially cirrhosis. Ovarian cystomas of large size frequently cause confusion with large amounts of free fluid in the peritoneal cavity. The absence of shifting dullness and the presence of flatness in the midline of the abdomen with the patient in the supine position are the most important differentiating features of ovarian cystomas. Pelvic examination may fail to reveal any definite connection of a mass to the uterine adnexae. The rectum must be examined in every patient and it is often possible to detect a "rectal shelf" in patients with carcinomatosis of the peritoneum causing ascites.

Palpation of the liver is easy when it is moderately or markedly enlarged. Careful notation of its consistence, surface, edge, and extent below the costal margin in the mid-clavicular line are important. The edge of a normal liver can often be palpated on deep inspiration. The daily observation of the size of the liver including its upper margin of dullness anteriorly is important in hepatitis. If the liver suddenly decreases in size and continues to do so, and if there is a fetor hepatis and disturbed sensorium, the prognosis is very poor.

The presence of signs of localized peritonitis in the right upper quadrant in association with fever, chills, nausea and vomiting, fatty food intolerance and colicky pains is practically diagnostic of acute inflammatory gall-bladder disease or an acute recurrence of chronic gall-bladder disease. In such patients jaundice usually is evidence of common duct obstruction from stone. An inflammatory mass may be palpated below the margin of the liver in many instances especially when the acute disease is subsiding. Generalized peritonitis may develop as the result of rupture of an acutely inflamed gall bladder with stones.

One of the most neglected and the least appreciated findings in liver disease is splenomegaly. In cirrhosis, acute hepatitis and acute liver necrosis, the spleen frequently is enlarged enough to be palpable. The presence of splenomegaly in a jaundiced patient definitely points toward primary liver disease as a cause of jaundice. Of course it may be enlarged in biliary cirrhosis, may be present as an independent finding in an unrelated but concomittant disease, or the patient may have a familial hemolytic jaundice or anemia. Suffice it to say that the presence of a palpable spleen is evidence of an abnormal state, and one must think strongly of liver disease.

One sign, when present, has more diagnostic importance than any other. In a jaundiced individual the presence of a palpable, non-tender, smooth gall bladder is practically pathognomonic of carcinomatous obstruction of the common bile duct anywhere from the entrance of the cystic duct to the ampulla of Vater. When a gallstone obstructs the common bile duct, the gall bladder seldom is palpable because of previous inflammation with thickening of the gall-bladder wall which prevents distention. A previously normal gall bladder can distend readily. Courvoisier recognized these facts many years ago. Failure to palpate the gall bladder does not exclude carcinomatous obstruction. A distended gall bladder in a non-jaundiced individual is known as hydrops of the gall bladder and must not be confused with the occurrence in a jaundiced individual. This is due to cystic duct obstruction by a gallstone usually. The gall bladder may be palpated when it has a very large stone or many large stones in the fundus. Carcinoma of the fundus of the gall bladder causes an irregular hard mass. Inflammatory masses are usually tender.

A differential diagnosis of liver diseases and diseases of the extra-hepatic biliary tract is possible from the observations made at the bedside and often a definite diagnosis can be made.

Jaundice of the retention type occurs in two diseases. In constitutional hepatic dysfunction there is a very mild jaundice. Usually other members of the family also have mild jaundice. No systemic symptoms and no anemia occur. The spleen is not palpable. In familial hemolytic anemia or icterus the patients are mildly or severely anemic from birth. Jaundice fluctuates greatly. The spleen is always enlarged and usually palpable. One can often get the history of exacerbations of symptoms with chills and fever often called hemolytic crises. Gallstones form in a large number of these patients so it is entirely possible to have the history of typical gallstone colic superimposed upon or even overshadowing the primary complaints thus making the differential diagnosis more complicated. The acquired type of hemolytic anemia with jaundice may be secondary to other diseases such as blood dyscrasias or liver disease, but may also be primary. The spleen is palpable and the anemia is evident, but there is no family history of similar illness except by rare coincidence, and the illness does not date back to infancy or early childhood.

The largest group of jaundiced patients have a regurgitation type of jaundice and it is of utmost importance to establish whether or not there is extra hepatic biliary obstruction or parenchymal liver disease. The urine is beer-brown in color and the stools light to acholic. The liver is enlarged but there is no splenomegaly in simple extrahepatic obstruction of the bile ducts unless the jaundice has persisted for a long time (many months to years). It is necessary to differentiate between cancerous obstruction and calculous obstruction in the group of cases with extrahepatic obstruction.

The commonest type of jaundice (except during an epidemic of hepatitis) is that due to gallstone obstruction of the common bile duct. Characteristically the jaundice fluctuates in intensity, is abrupt in onset and is less intense than in carcinomatous obstruction. The stools may or may not be acholic. Colicky pain which is severe and radiates from the right upper quadrant of the abdomen to the region of the right scapula and interscapular region is present at some time during the early course of illness and usually before the onset of jaundice. Nausea and vomiting frequently accompany bouts of pain. The jaundice deepens perceptibly when there has been an attack of pain unless the stone was passed into the duodenum or shifted in position. The past history of definite intolerance for fatty and fried food, cabbages, onions and especially the history that food actually induces typical gallstone colics are very helpful. Obstruction due to gallstones may be "silent" in so far as an association with pain is concerned. Observation of fluctuation in the intensity of jaundice, in the color of the stools, episodes of chills and fever all suggest the presence of gallstones. It may be impossible to differentiate the "silent" type of gallstone obstruction from acute hepatitis.

Cancerous obstruction is characteristically painless, but there are a number of patients who have vague deep-seated epigastric pain or even pain suggesting gallstone colic. The jaundice is intense, persistent, associated with pruritus and usually abrupt in onset. Usually there are no chills, fever or vomiting. The gall bladder is frequently palpable below the liver margin and is not tender. This finding is of the greatest importance, for it is pathognomonic of cancerous obstruction of the extrahepatic biliary tract in the jaundiced patient. Carcinoma of the gall bladder and bile ducts usually occurs in patients with gallstones too so any or all of the symptoms of chronic cholelithiasis may be present in the past history or the present illness. Carcinoma of the gall bladder may cause a great deal of pain but causes jaundice only in the cases where it invades the common bile duct.

Rarer forms of obstructive jaundice are due to lymph-node enlargement at the porta hepatis causing compression of the hepatic or common bile ducts. Hodgkins disease, lymphatic leukemia, lymphosarcoma or carcinomatous metastases may be the primary disturbance. Recognition of lymphoblastomata is aided by finding generalized lymph-node enlargement and moderate to very marked splenic enlargement.

Stricture of the common bile duct is a serious complication of cholecystectomy in which the duct was inadvertently ligated, cut, or injured. The history usually reveals that jaundice began shortly after operation and persisted, that a large amount of bile suddenly appeared at the wound as if from an abscess which ruptured, bile continued to drain indefinitely from the wound, and jaundice appeared or deepened as soon as the bile fistula closed. Strictures frequently are not treated immediately, so biliary cirrhosis with hepatomegaly and splenomegaly develop.

Regurgitation jaundice of hepatic origin is frequently encountered. The onset of jaundice immediately after exposure to toxic chemicals or drugs such as carbon tetrachloride, cincophen, dinitrophenol, arsenicals, sulfanilamide, benzene, etc. suggest the specific chemical as the etiological agent. The history of exposure to patients with epidemic hepatitis, transfusion with human blood or blood derivatives, the use of homologous sera of any kind in the recent past directs one's attention to acute hepatitis which probably is due to a filterable virus or viruses. The history of prodromata including fever, severe anorexia, nausea and vomiting, malaise, and bowel disturbances before the onset of jaundice is very suggestive evidence in favor of acute hepatitis. There are authentic cases of acute hepatitis without jaundice and these are very difficult or impossible to recognize unless an epidemic is occurring. The spleen is palpable in about one-half of the cases and undoubtedly the percentage is higher when daily examinations are made. The size of the liver should be noted on initial examination and checked frequently during the course of illness. Observation of the breath for a fetor hepatis and observation of the sensorium have been emphasized above. Daily observations of the feces for the appearance of bile-pigment is important for the recognition of the recession of jaundice. Ascites may be present in the more severely ill patients.

Recognition of hepatic cirrhosis is dependent on the finding of some of the characteristic features such as a firm, finely nodular liver, enlarged spleen, spider nevi, ascites, evidences of collateral circulation on the abdominal wall and evidence of malnutrition and jaundice. Probably not more than half of all of the patients are jaundiced and any of the above-mentioned features may be missing. The skin is soft and the axillary hair is often sparse. When the skin is deeply pigmented in a male who is also diabetic, one should suspect hemachromatosis or pigment cirrhosis.

The liver may be enlarged as a secondary manifestation of other diseases. Congestive heart failure causes chronic passive congestion of the liver. The liver frequently is tender to palpation, and not infrequently the patient may have pains in the right upper quadrant of the abdomen as a result of the congestion. Metastases to the liver may cause massive enlargement of the liver. One can recognize metastatic nodules in the liver with reasonable certainty if one can palpate a depressed area in the center of the nodule. The liver often is tender when it is filled with metastases. Recognition of symptomatology and physical characteristics of the primary carcinoma is very important. There are many other diseases which may affect the liver secondarily, but these will not be discussed separately.

Summary

The importance of the clinical examination of the patient with evident or with suspected liver disease cannot be overemphasized. There is often a tendency to turn quickly to laboratory aids without adequate clinical examination. However, the so-called liver function tests may help and may confirm a clinical diagnosis or indicate the need for more prolonged observation and study of a case. Admittedly there are times when the clinical picture is so complex that an exact anatomic diagnosis of the liver disease can be made only by some type of surgical procedure. Careful interpretation of the details of the history and of the physical examination will often, probably in the majority of cases, direct the doctor to the correct diagnosis.

WHY DO AIR TRAVELERS CHEW GUM?

People making their first trip by air are surprised to have the hostess offer them gum to chew as the plane lands. The reason for the gift of gum, says the Sonotone research laboratories, is that the working of the jaws in chewing tends to keep the air pressure equalized on both sides of the ear drum. Chewing action opens the throat end of the Eustachian tube, which is an air duct leading to the middle ear. In landing, an airplane moves from low to high atmospheric pressure, a situation which would cause discomfort if the increased pressure was exerted only on the outer side of the ear drum.

KERION: A REVIEW

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IN modern medical writing the term kerion is used to designate an acute, highly inflammatory, carbunculoid type of fungous infection which predominantly involves the scalp and bearded region. The word is an extremely old one in medical nomenclature, the ancient Greeks having used it to denote deep, infiltrative, cutaneous inflammations. Kerion is not unusual in this part of the Midwest because a fair proportion of the population is engaged in farming or dairying, occupations which necessitate close contact with animals which are subject to fungous infections due to species which cause this type of reaction.

Kerion can be produced by several species of fungi. Lewis and Hopper[3] reported this form of infection due to Trichophyton gypseum, Microsporum lanosum, M. audouini, M. fulvum; T. crateriforme and T. niveum. The great majority of cases are produced by species of fungi which are highly pathogenic to animals (zoophilic fungi of Wise and Sulzberger[9]), especially T. gypseum. It is extremely rare that the so-called human pathogens (anthropophilic fungi of Wise and Sulzberger) evoke such a reaction.

Clinical Features

At the beginning kerion rarely presents the granulomatous tumefactions which are so characteristic of the disease at the peak of its intensity. It usually starts as an ordinary patch of squamous or vesicosquamous ringworm on a hairy area or which has spread to a hairy area from a neighboring portion of the glabrous skin. In some instances the early lesion resembles an ordinary, small furuncle. Frequently there is but one lesion and rarely more than a few. Within a short time the plaques become larger and more inflamed and the surface becomes covered with impetiginous crusts. After a few days, or at the most two or three weeks, follicular pustules, either few or in large numbers, predominate the picture. This pustular, follicular infection spreads to the perifollicular tissues and through confluence of the adjoining follicular infiltrations, the entire lesion becomes a boggy edematous mass. In this fully developed stage the lesion is a rather sharply demarcated, sloping bordered, macaroon-like, spherical tumor of red or livid color which, for a time, is firm and later mushy due to coalescence of the follicular abscesses. At this point the surface is oozing and the follicular pustules, when broken, emit sanguinous pus. The odor is repulsive. The individual round lesions increase in size but rarely grow larger than 6 or 7 cm. in diameter. They are usually raised from 0.5 to 1 cm. above the plane of the surrounding skin. The first lesion is usually the largest and these which appear later rarely become as large, although sometimes there may be 6 or 8 kerions on the scalp or bearded region which are of almost equal dimensions. The skin between the lesions is usually normal or presents only a scattering of follicular pustules which occasionally coalesce to form small nodular foci. There is considerable variation in the intensity of the inflammation in different cases.

After the inflammation has reached its height the pustules evacuate their contents and the affected hairs are expelled. At this stage the surface becomes smooth and hairless and the epidermis thin and tense. Extensive erosions and even ulcerations frequently develop and the gaping follicular openings give the lesions a "worm-hole" appearance.

Early in the course of kerion the hairs are unbroken and appear normal. Stubby hairs, which are so frequently noted in infections due to anthropophilic fungi, are rarely seen in kerion. Later, when the phase of purulent folliculitis is fully developed, the hairs can be extracted easily without breaking them. Apparently healthy hairs, situated between the grossly diseased ones, can sometimes be pulled out without difficulty, the root being atrophic as a result of the neighboring inflammation. Even in the final stages, after expulsion of most of the hairs, a few tufts of healthy hair may remain.

The average duration of kerion is six or eight weeks, although severe cases may last for three months. There is a constant tendency toward spontaneous healing. The hair almost always regrows and there is an eventual return to complete

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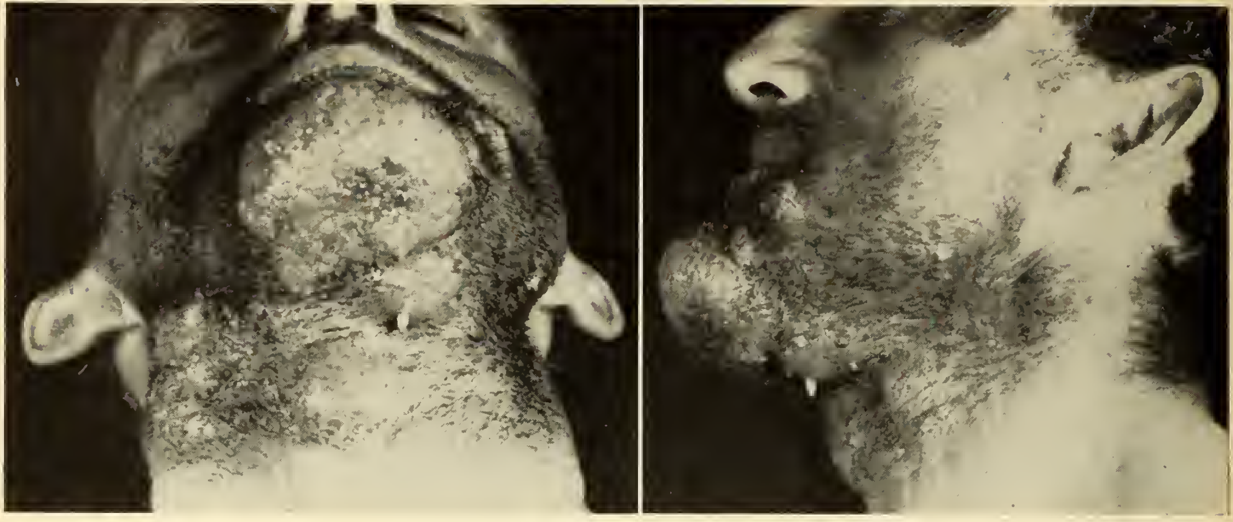
From the Division of Dermatology, University of Minnesota, H. E. Michelson, M.D., Director.



Kerion of the Beard in a Farmer.

normalcy, although permanent baldness may occur rarely.

Besides the aforementioned local changes, systematic symptoms are commonly noted as a result of absorption of substances into the lymphatics and blood stream. In kerion of the scalp a retro-auricular, occipital and cervical adenitis is an almost constant finding and lymph nodes even farther removed from the primary focus may be enlarged. The nodes are at first firm and tender; later there may be softening and rupture to the surface. Fatigue, malaise, and cephalgia have been observed frequently. The fever may be high in cases of extensive kerion. Miescher[5] reported cachexia in extremely severe cases. The blood usually shows a polymorphonuclear leukocytosis.

Kerion of the beard, or sycosis parasitaria, is analagous to the disease as it occurs on the scalp. Beginning as superficial, vesicular, discoid or ringed foci, a pustular folliculitis soon develops and the entire lesion becomes edematous and raised above the surrounding skin. As a rule there are only a few foci; sometimes only one surrounded by small abortive lesions. Rarely, new superficial vesicular foci develop side by side with the granulomatous masses and nodules. As on the scalp the skin between the lesions is usually normal. The chin and sides of the face are the most common sites of involvement; rarely the upper lip is affected. The general symptoms and course parallel those of kerion of the scalp.

Kerionic lesions occasionally occur on areas other than the scalp and bearded region presumably due to infection of lanugo hairs by ectothrix trichophytons. Such lesions have been noted on the dorsums of the hands, forearms, sides of the neck, buttocks, inguinal region and external ear. The term "agminated folliculitis" has been used to designate this affection.

Granduloma trichophyticum should also be mentioned in relationship to kerion. It is a form of deep, infiltrative trichophytosis first described by Majocchi[4] and discussed chiefly in the Italian literature. It is characterized by round, smooth, indolent, bean- to nut-sized nodules which are tender on pressure, and usually light red in color. There is a tendency toward grouping. Early in the course of the disease the nodules have an elastic consistency but later become soft and almost fluctuant. In some cases, however, they become hard and keloidlike. There are no signs of suppurative folliculitis or abscess formation as in kerion, a point which was stressed by Majocchi and subsequent writers. The softening which occurs in the lesions represents a secondary necrobiotic change in the granulation tissue similar to that which occurs in gumma. On pressure a serosanguineous material rather than pus can be expressed. Impetiginous changes and pustules at the follicular orifices occasionally occur late in the disease but are regarded as a secondary infection by pyogenic cocci.

The nodules don't develop primarily but become superimposed on a focus of ordinary ringworm almost exclusively produced by anthropophilic fungi. The lesions are usually located on the scalps of children from six to twelve years of age or on the bearded regions in adults. Rarely they develop from squamous lesions of the glabrous skin.

The course of granuloma trichophyticum is extremely torpid, the disease usually lasting several months. In time the granulation tissue resorbs or softens, and sometimes degenerated material is discharged on the surface. The skin may return to normal or become somewhat atrophic.

There has been considerable discussion concerning the mode of entry of fungi which are found in the granulation tissue in the cutis. Although some authors have stated that the fungi penetrate from the surface directly into the cutis, the concensus is that the follicles represent the point of entry since, in the course of the affection, the diseased hairs and follicles become degenerated permitting the resorption of fungus elements into the cutis. Sabouraud thought that there was no good proof that there was any active emigration of fungi from the surface to the cutis. Disintegration of the follicle, whether as a result of purulent inflammation or degeneration, thus plays the principal role in the development of granuloma trichophyticum. Majocchi and Mazza tried to introduce fungi directly into the cutis in an effort to produce this type of the disease experimentally, but the results were practically negative. Following intracutaneous implantation of fungi in humans and dogs, nodules or abscesses rapidly formed followed by expulsion of the fungi. Similar attempts in cock's combs produced infiltrated plaques and nodules after 3 to 4 weeks which involuted slowly and showed tuberculoid structure histopathologically. Majocchi, however, did not believe that the lesions were analogous to those in the human as the course was much more rapid and the tendency to heal much greater.

So-called chronic kerion represents a slowly progressive gummoid change of the contents of ordinary kerion and is always preceded by an acute stage with pustular folliculitis.

In those cases of granuloma trichophyticum in which trichophytin tests were done, the reactions were weakly positive in contrast to the strongly positive reactions which characterize kerions.

As far as other diseases are concerned the differential diagnosis of kerion is usually not difficult. The prominent feature of pustular folliculitis is against other granulomas such as syphilis, tuberculosis, actinomycosis, blastomycosis and mycosis fungoides. The relatively sharp demarcation of the lesions aids in the differentiation from pyoderma, though in its early stages kerion may resemble impetigo. In the former, however, tiny blisters and pustules may be seen as the border while the individual lesion in impetigo is a bulla which spreads peripherally.

On the face there may be confusion with staphylococcic sycosis in the early phases of kerion. One of the chief characteristics of the latter, however, is the agmination of small lesions to four larger nodules, a feature not seen in ordinary sycosis. The presence of round and annular vesicular foci characterizes the initial stages of kerion but not coccygenic sycosis. The latter affects the upper lip with great frequency while kerion almost never occurs in that location.

Chancre of the face is not apt to be confused with kerion since there are no follicular pustules in the former.

Demonstration of the causative fungi in wet preparations and cultures affords a definite proof in the final diagnosis of kerion.

Examination of Hairs and Pus—Cultures—Inoculations

Sabouraud stated that it is a curious but certain fact that the examination of pus from kerion almost never shows recognizable fungi, yet cultures from the pus are usually positive and are regarded as the easiest and surest proof of the nature of the disease. This is explained by the fact that the dissociated fungous elements are so easily confused with cellular debris. In fully developed kerion it is almost impossible to demonstrate fungi along the hairs in potassium hydroxide preparations although such examinations are positive at the very beginning of the lesion. As previously mentioned the vast majority of cases of kerion are due to Trichophyton gypseum. The growth of the organism is largely on the outside of the infected hair which becomes covered by a mantle of mycelial elements and spores. The latter are 2 to 4 mm. in size and, in wet preparations of potassium hydroxide, appear to have the same mosaic arrangement which characterizes the microsporums. If the slide is pressed a little bit, however, it can be seen that the spores of T. gypseum are arranged in chains, a feature never seen in microsporum infections.

Inoculations into the skin of both humans and animals is not difficult. Sabouraud spoke highly of Rivalier's procedure in which a paste containing a mixture of honey and culture powder is applied to a hairy part of the skin. The inoculation is usually positive by the seventh day. The hair of the monkey illustrates the microscopic features of T. gypseum in hair more beautifully and schematically than human hair. Sabouraud stated that primary cultures should be used for inoculation, since in later cultures the parasitism is changed and sporulation is lost.

In animals the infection is less intense and suppurative than in man. Discharge from the lesions resembles large drops of glue which exudes from between the hairs and mats them down.

Histopathologic Features

The histopathologic findings in kerion vary considerably in extent and intensity. In the beginning inflammatory changes in the epidermis are noteworthy, and the tendency to follicular localization is evident early in the course of the disease. Superficial epidermal spaces filled with leukocytes may be seen and there is a perifollicular infiltrate made up of lymphocytes, plasma cells and polymorphonuclear leukocytes. By means of the gram stain mycelial filaments may be demonstrated in the horny layer of the follicles and around the hairs. As the disease progresses the inflammation spreads toward the hair root although the latter is the last part of the hair to become affected and may be entirely spared. The luxuriant growth of fungi about the hair shafts has, in Miescher's opinion, much to do with the high degree of allergy in kerion. The tissue reaction is so exudative that small abscesses may develop in the middle or upper portions of the follicle. The infected hair finally loosens and falls out, leaving only the root. The sebaceous glands associated with the follicle are also involved early and after a stage of leukocytic invasion the entire structure disintegrates.

The follicle walls become edematous, vacuolated and permeated by leukocytes. The degenerated cells stain poorly. Lymphocytes, plasma cells, and eosinophils also make up part of the infiltrate along with large macrophages, large nucleated fibroblasts and epithelioid cells. The perifollicular vessels are dilated and filled with leukocytes. After complete degeneration of the follicle wall spherical abscesses may be seen in the cutis, some of which contain bits of disintegrated hair and fungi. Degenerated filaments and spores may also be seen lying free between the leukocytes. No other micro-organisms are in evidence and cultures of pus show single colonies of staphylococci only exceptionally. The inflammatory and degenerative changes in kerion seem out of all proportion to the number of fungi seen in the tissues.

In severe cases the abscesses penetrate to the surface, usually through the follicular orifices and only rarely through degenerated intrafollicular portions of the skin. In less severe cases the abscesses are gradually absorbed. Late in the course of kerion giant cells, both the foreign body and Langhans types, may be seen along with epithelioid cells and fibroblasts. Portions of the degenerated follicle remain as irregular epithelial masses. Another feature which has been observed is the formation of pseudoepitheliomatous changes of such degree that differentiation from true epithelioma may be difficult. In these cases irregular karyokinesis and pearl formation may even be present, adding to the confusion. Fully developed kerion presents a variegated and complicated picture. Not all adjoining follicles are affected and those which are involved become so at different stages of the disease. Some follicles remain completely intact throughout the entire course.

Because of the degenerative changes in the follicles and the formation of granulomatous infiltrations as deep as the subcutaneous blood vessels, the entire architecture of the cutis is changed. The elastic and collagenous fibres diminish to mere remnants. The sweat glands may be seen unchanged in the center of a granulomatous mass. Usually epithelial sprouts may be seen in the upper part of the follicles which later take part in the process of regeneration. These sprouts, along with follicles which escape the inflammation, explain why permanent baldness is rare.

In granuloma trichophyticum the tuberculoid structure of the infiltrate is outstanding as compared to the acute pustular folliculitis which predominates the picture of kerion. In the former, the middle and deep portions of the cutis are involved by such nodular infiltrations. The infiltrate is perifollicular and the follicles are often cystic and degenerated to the point of being unrecognizable. Fungus containing fragments of hairs lie free in the granulation tissue. Fungi may also be seen between the cells or enclosed in giant cells. In the unusual fibroid form of granuloma trichopyticum fibrous masses are present in the cutis. Suppurative changes in this form of fungus infection are much less noticeable than in kerion.

Allergy in Kerion

Bloch[1] studied the biologic and allergic phenomena in fungous infections extensively and he and Jadassohn and their followers contributed much of the original work in this field, much as Koch and his school did in tuberculosis. Although many species of animals have been used in experimental work on pathogenic fungi, the guinea pig has remained the principal animal and Achorion quinkeanum the principle fungus in studies concerning diseases produced by Hyphomycetes. Sulzberger[7] stated one strain of A. quinkeanum has been used in Zurich for over 30 years and has regularly produced uniform experimental results.

Primary infections in the guinea pig run their course in three or four weeks with the peak of intensity about the twelfth day. In reinoculations the response is accelerated, being most intense within six days and completely healed in ten or twelve days.

Similar experiments in man strongly resemble those in the guinea pig as far as the difference between first inoculations and reinoculations are concerned, except that in man the course of events is less constant and regular. Differences in individuals and variations in the response at various inoculation sites are greater in man. Variations in the response to various strains of fungi are also more noticeable. In general, the duration of the infection is much longer (two or three months in first inoculations of A. quinkeanum), and the periods of peak intensity and resolution are not so sharply bordered. The length of the inoculation period is also more fluctuant. In man the entire course of events more closely approaches that which takes place in the guinea pig when experimental inoculations are made with fungi of low virulence. In man, the more virulent the strain used for inoculation, the greater is the analogy to the infection in the pig.

In reinoculations in many with zoophilic fungi, whether the first infection was spontaneous or artificial, the reaction is accelerated and the course of the infection is abortive or shortened, influenced by the allergy of the entire skin produced by the first inoculation. This allergy is not type-specific and persists after the primary infection has healed. The degree of allergy depends on the type of fungus, the mode of inoculation, the individual and other unknown factors. Accordingly, the reaction to reinoculations varies from those which closely simulate the first inoculating to accelerated abortive infections in which fungi can be demonstrated to, finally, almost complete allergic reactions in which no fungi can be found. Other factors which influence the degree of allergy and the fate of reinoculations are the depth, extent and number of primary foci, the number of preceding inoculations, and the distance of the reinoculation site from the primary focus. There are undoubtedly other factors too, such as the individual capacity to react to a pathogenic organism and the ability of certain fungi to elaborate allergizing substances. Experimental reinoculations in patients with kerion have been performed by various workers and the results have followed the general rules previously outlined.

In infections in man produced by anthropophilic organisms the degree of skin sensitivity is not high. In kerion, however, and in other infections produced by zoophilic fungi the degree of sensitivity to trichophytin is high. There are exceptions to these general rules, however, which defy explanation.

In kerion, "id" eruptions are not uncommon because of the high degree of sensitivity. In this type of infection especially, the sequence of exposure, primary infection, development of allergy, development of primary lesions and the eruption of the "id" is often clearly apparent. In trichophytids almost every form of allergic reaction of the skin may be represented, although deep granulomatous and necrotic processes seen commonly in tuberculids and syphilids are rare among "ids" due to fungi.

Treatment of Kerion

In discussing the therapy of kerion two points should be brought out: (1) There is an outspoken tendency toward spontaneous healing and (2) the treatment is not as routinized as in infections due to anthropophilic organisms such as tinea capitis due to M. audouini. Many therapeutic methods have been described in the literature and it is not easy to evaluate them because the favorable end result is inevitable on biologic grounds alone.

The various therapeutic measures may be discussed under the following headings:

A. Local Agents Not Specifically Antiparasitic.—These include soothing, cleansing and softening agents such as moist compresses, moist or dry heat, ultraviolet radiation, incision of small abscesses and currettage of masses of granulation tissue. Dr. Charles Freeman[2] believes that the judicious use of solid carbon dioxide shortens the course of kerion. In most cases mild, moist compresses which soften and remove crusts and facilitate drainage, constitute the best treatment of the disease.

B. Epilation (Manual or By Means of X-rays).—Since the severity of the inflammation in kerion results in expulsion of the diseased hairs epilation by means of x-rays is rarely, if ever, indicated. Manual epilation of infected hairs, along with the removal of crusts, is helpful.

C. Strong Antiparasitic Remedies.—The use of medications containing high percentages of resorcin, sulfur, chrysarobin, mercurials and salicylic acid is rarely necessary. The use of 20 per cent salicylic acid ointment has favorably impressed Ormsby.[6] The internal use of iodine is unnecessary in kerion.

D. Non-specific Stimulation of Immunobiologic Defense Mechanisms.—Intramuscular injections of turpentine in olive oil, injections of milk and the use of intravenous typhoid vaccine have been used by many in the treatment of kerion. The concensus is that such methods are of slight value.

E. Trichophytin Desensitization.—Oppenheim is firmly convinced that trichophytin desensitization is valuable in kerion and other forms of fungous infection. Miescher believed such treatment was helpful in kerion, but of no value in non-inflammatory types of mycosis. In the experience of most observers such treatment has been unnecessary and since untoward local and systemic reactions can result it seems contraindicated in a disease which heals spontaneously.

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POSTMORTEM EXAMINATIONS AND THE JEWISH LAW

Because of the undesirability of some resistances against postmortem examination that appear among the relatives of Jewish patients who die, Dr. I. M. Rabinowitch, special lecturer in medical jurisprudence at McGill University, Montreal, recently investigated the laws with regard to postmortem examination contained in the Bible and in the Talmud. He points out that the attitudes of non-Jewish people of the same period toward postmortem examinations were much the same as those of the Jewish people. Arguments in favor of prohibiting postmortem examinations are based on four authentic instances in which a requested postmortem examination was prohibited by a celebrated rabbi. However, Rabinowitch points out that permission was refused in each instance because of the argument that the postmortem examination would not be of any value either in clearing the cause of death or of any benefit to the living. The thorough search which Rabinowitch has made convinces him that nowhere in the Bible, in the Talmudic, in the post-Talmudic or in the later Rabbinical writings is there any evidence that postmortem examinations are prohibited by Jewish law. Indeed, such prohibition would be inconsistent with the fundamental directing principle in Judaism—"The Laws were given that man shall live by them, not that they shall die by them."—*J.A.M.A.*, 130:151, (Jan. 19) 1946.

URETERAL OBSTRUCTION CAUSED BY ANEURYSM OF THE ILIAC ARTERY

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LAZARUS and Marks[1] have described the urinary symptoms associated with aneurysm of the abdominal aorta. They pointed out that the most frequent causes are arteriosclerosis and syphilis. The most common urographic finding in their cases was renal or ureteral displacement, and they stressed the diagnostic value of lateral pyeloroentgenogram.

We wish to report a unique and unusual case. It is the only such case seen at the Mayo Clinic. A review of the literature, although not completely comprehensive, has not revealed a similar case.

Report of Case

A man, fifty-eight years of age, was first seen at the clinic February 21, 1944. He had been perfectly well until two and a half months previously, when he had had generalized aching, malaise, loss of appetite and a temperature of 102° F. The fever had lasted several weeks and the patient had been treated symptomatically. One month after his illness, severe pain had occurred in the right groin and had extended to the right testis and right renal region posteriorly. The pain had been accompanied by hematuria, pyuria and urinary frequency. Treatment with sulfanilamide for one week had produced some improvement but very severe pain subsequently had occurred in his right groin and right hip. The pain in the hip had seemed to extend posteriorly to the midline of the lower part of the back. Urologic investigation was said to have disclosed bilateral pyelonephritis and two small stones in the left kidney. Urinary culture had revealed Salmonella aertrycke. Treatment with sulfanilamide had been continued and the fever and pain had subsided gradually in about ten days. During the next three weeks the patient had had intermittent fever and pain in the right groin. At the end of this period, he came to the clinic. The patient was well developed and well nourished but appeared moderately ill. The lungs and heart were normal. The blood pressure was 104 mm. of mercury systolic and 54 mm. diastolic. The pulse rate was 88 and his temperature was 101° F. The abdomen was slightly distended and there was some tenderness in the suprapubic region. Rectal examination revealed a questionable nodule in the lower pole of the right lobe of the prostate gland. It was felt that the patient possibly had carcinoma of the prostate.

Microscopic examination of the urine revealed hematuria, grade 1 (on the basis of 1 to 4), and pyuria, grade 2 (35 cells in each microscopic field viewed under the high-power objective). Urinary culture disclosed Salmonella. The value for the hemoglobin was 9.1 gm. per 100 c.c. of blood. The erythrocytes numbered 3,580,000, and the leukocytes numbered 6,600 per cubic centimeter of blood respectively. Flocculation tests for syphilis were negative. The value for the blood urea was 26 mg. per 100 c.c.; the value for the alkaline serum phosphatase was 7.0 units (King-Armstrong) per 100 c.c., and the value for the acid serum phosphatase was 1.0 unit per 100 c.c. The sedimentation rate of the erythrocytes was 93 mm. in one hour (Westergren). A roentgenogram of the thorax revealed torsion of the aorta. Anterior, posterior and lateral roentgenograms of the lumbar vertebrae did not reveal any abnormality. An excretory urogram disclosed delayed excretion on the right side and dilatation of the renal pelvis and calices and upper part of the ureter. The cause of the obstruction was not evident. Urography did not disclose any abnormality of the left kidney except a small cluster of shadows (Fig. 1). The cause of these shadows could not be determined. At this stage of the examination, it was felt that the patient probably had a carcinoma of the prostate which had caused obstruction of the right ureter. On February 23, 1944, cystoscopy revealed a trilobar prostatic enlargement, faint trabeculation of the bladder and erosion of the right ureteral orifice. A No. 5 ureteral catheter could be passed easily up the right ureter although it seemed to fit snugly as it was being passed through the portion of the ureter corresponding to the wall of the bladder. A catheter could be passed easily up the left ureter. Rectal examination was repeated and the prostate was thought to be the site of a malignant lesion. Repeated attempts to obtain a right pyelogram were unsuccessful. A left pyelogram did not disclose any abnormality.

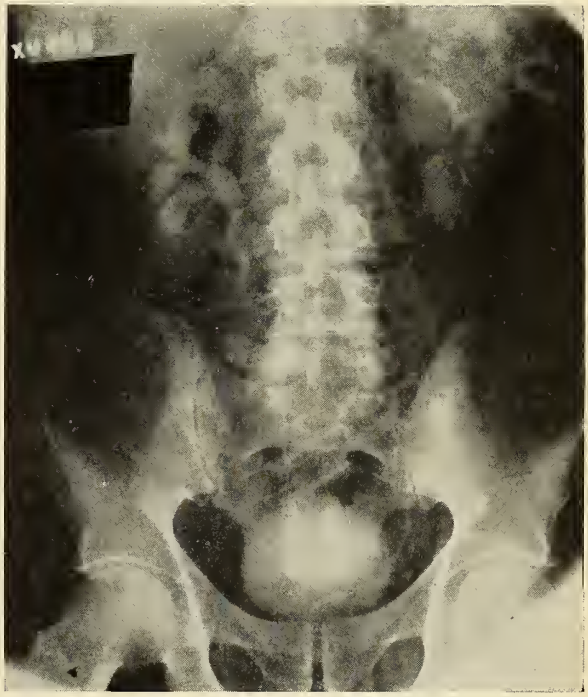

Fig. 1. Excretory urogram showing dilatation of the renal pelvis and calices and upper third of the ureter on the right side.

On March 25, 1944, two days after cystoscopy was performed, the temperature was 103.2° F. There were no physical findings to explain the elevation of tem-

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perature. The patient complained of pain in the right groin and hip, and at this time he began to complain of weakness in the right leg. The fever subsided in the next few days. On March 1, 1944, pitting edema of right lower extremity was noted. Arterial pulsations were normal and the temperature of the skin of the right leg was increased. A consultant made a diagnosis of thrombophlebitis of the right iliofemoral vein and suggested that a pelvic lesion might be pressing on the femoral vessels and causing the thrombophlebitis.

On March 27, we were able to palpate a definite mass in the right lower quadrant of the abdomen. There was rigidity of the right rectus in the lower half and tenderness was present over the entire right lower quadrant and in right flank. During the day, the patient complained of severe pain in right side of abdomen. At 11:30 p.m., he complained of severe pain in right side. Shock developed and the patient died.

Necropsy revealed an arteriosclerotic aneurysm of the right common iliac artery (Fig. 2) which had ruptured and caused extensive retroperitoneal hemorrhage. The aneurysm had caused partial obstruction of the right ureter, hydronephrosis, grade 2, and beginning pyonephrosis. The ureter was compressed between the right common iliac artery and the aneurysm at the point of crossing the artery. The patient also had one stone, 2 mm. in diameter, in lower calix of the left kidney, arteriosclerosis, grade 3, of the aorta and coronary sclerosis, grade 1.

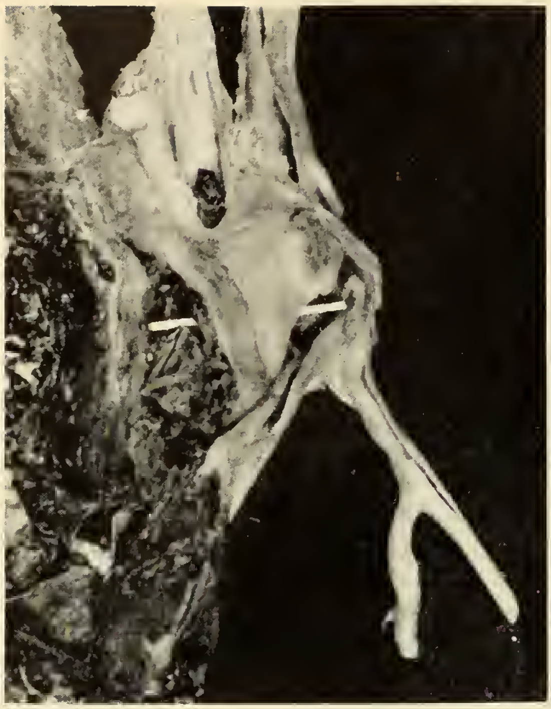

Fig. 2. Aneurysm of the right common iliac artery with clot in place.

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116 PHYSICIANS DIE IN ACTION DURING 1945, JOURNAL REPORTS

Death Claims Approximately 4,015 Doctors as Compared with 3,415 During '44; Heart Disease Leading Cause

Death claimed approximately 4,015 physicians during 1945 as compared with 3,415 the previous year, according to the January 19 issue of *The Journal of the American Medical Association.*

On the basis of an analysis of 2,962 obituaries published in *The Journal* during the year, it was found that the average age at death was 65.3, the same as in 1944. The majority of the physicians—494—died between the ages 70 and 74.

Heart disease continued to lead the causes of death among physicians. Coronary thrombosis and occlusion accounted for 655 deaths, 246 occurring between the ages 60 and 69. Cancer and tumors accounted for 296, and pneumonia claimed 145 doctors.

Of the 25 suicides recorded, 11 were the result of bullet wounds, three of a cut artery and three of drugs. There were 87 accidental deaths and 33 of them involved automobiles.

Among the decedents were 256 who had been teachers in medical schools, of whom 97 had reached professorial status. There were eight deans, one of whom had also been president of a medical college, two principals of a high school, two teachers in public schools, one of whom had been head of the business and practice department of the city's high schools, and 78 members of education boards. One hundred and forty-four had been health officers.

The 2,962 *Journal* obituaries included 116 physicians who were killed in action during World War II and 118 who died while in military service. Nineteen physicians lost their lives in the Pacific area, 13 in Germany, 12 each in the European Theatre of Operations and in France, and 11 in Okinawa, including six who were lost in the attack on the *Comfort.*

Of the 118 physicians who died while in military service, aircraft accidents caused the deaths of 22 and vehicle accidents of 10. Heart disease accounted for 25 deaths, 12 of which were attributed to coronary thrombosis. Cancer caused 13 deaths.

The 116 deaths classified killed in action give an average age of 33.0, while the 118 who died while in military service average 40.1. By combining the two, an average age of 36.6 is noted.

Of the seven U. S. Public Health Officers whose deaths were recorded, one died when he slipped on the Jacob's ladder while assisting wounded aboard ship and one when his ship was destroyed in enemy action.—*A.M.A. News,* Jan. 17, 1945.

NOTES ON THE HISTORY OF MEDICINE IN HOUSTON COUNTY PRIOR TO 1900

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(Continued from January issue)

J. M. Riley, who was a native of White County, Illinois, was born on January 18, 1833. A graduate of the Eclectic Medical Institute at Cincinnati, Ohio, in 1859, he came in the following year to Brownsville, Houston County, Minnesota, where he announced himself as physician and surgeon and where he remained, through the boom days of the village and into the period of its decline, at least as late as 1899, according to an old gazetteer and business directory. Dr. Riley was a Mason. In 1870 he served as county coroner and in 1879 he was elected from the first district as a representative in the state legislature. After 1883 he practiced medicine under a state exemption certificate.

Captain See was discussed fully in paragraphs about Brownsville Township, in the narrative preceding this series of biographical notes. Supposedly the possessor and user of medical knowledge, and said to have been in Brownsville during or after the Civil War, he proved on investigation to have been not a physician, but Captain Charles H. See, of Caledonia, Provost Marshal and President of the Enrollment Board of the First Congressional District, which included Houston County. He undoubtedly was at times in the county in the course of duty, and inasmuch as his fellow members on the board were physicians and because much of the work of the board had to do with claims for exemption based on physical disability, there is reason for local mention of Captain See as a physician.

Edwin M. Sheldon, of the regular school of medicine, came from Illinois in 1881 and for about two years practiced medicine in the village of Houston. In 1882 his office was in Field and Briggs' building and he was boarding at the Sherman House. It appears likely that he and Dr. Timothy A. Pope were removing from the village at about the time that Dr. H. P. Johnson settled there. Although Dr. E. M. Sheldon may have been related to the branch of the Sheldon family to which Dr. G. J. Sheldon belonged, such assumption has not been borne out by information at hand.

Giles James Sheldon, tall, slender, blue-eyed, mentioned often in these pages, was one of the earliest settlers and, it is believed, the first physician of Houston County, who arrived on June 27, 1853, at Brownsville, in Brownsville Township.

He was born at Norway, Herkimer County, New York, on May 12, 1806, the son of Caleb Sheldon, a farmer born of English parents, and Rebecca Giles Sheldon, of English descent, a native of New England. In his genealogy of the Sheldon family for four generations Dr. Sheldon mentioned that three Sheldon brothers, who were English seamen, came to America to escape King Charles II; their descendants became farmers. In his immediate family he referred to only one brother and one sister, G. W. Sheldon and Clotilda.

A frail child and youth, Giles J. Sheldon received his early education at home from his mother, who gave him excellent grounding for his subsequent cultural and scientific training. When he was fifteen years old, he entered Fairfield Academy, at Fairfield, New York, on February 5, 1821, and there studied as his health permitted. On February 9, 1826, he entered Lowville Academy, at Lowville, in the state, and the following year, he enrolled at Union College in Schenectady. In June of 1829 he registered at Camden Academy, at Camden, New York, but returned to Union College, where he was elected to the Phi Beta Kappa fraternity and where, in 1830, he received his degree of Bachelor of Science. For two years he studied theology with the expectation of becoming an Episcopal clergyman, but, influenced by his uncertain health, he transferred to the study of medicine. During the years from 1831 to 1833, inclusive, he studied botany, chemistry and medicine at the College of Physicians and Surgeons of the University of the State of New York, at Fairfield; he received instruction in anatomy and physiology from James McNaughton, M.D., and P., and on completion of his work with Dr. McNaughton received certificate No. 165, dated October 30, 1833. At the beginning of the following year, on January 21, he was graduated as Doctor of Medicine. There is record in his private papers that he studied also under several physicians in New York and in Philadelphia, among whom were Dr. Loon (?) and Dr. Booth, and under Dr. Willoughby, of Newport, and that in the intervals of studying medicine he was engaged in farming and surveying.

Dr. Sheldon began medical practice in Norway, New York, in February, 1834, but late in June of that year he removed to Trenton, in Oneida County. On April 10, 1835, he was appointed postmaster at Holland Patent, New York, and served until he moved to Van Buren Harbor, New York, where he practiced medicine in 1836 and 1837. On December 2, 1835, he had been appointed surgeon for the Fourth and Fifth Brigades of Riflemen of the State of New York, an appointment in which he was qualified on March 30, 1836. In 1837 he traveled to Illinois, a state that was the field of his medical practice for three years. In 1840 he moved to Ohio and for the first two years practiced at Amanda. From December 3, 1841, to April 24, 1849, he was in Mercer County, practicing medicine and, for the latter part of the period, living in the village of Mercer and studying law in addition to carrying on his medical work. Thereafter, in Celina, Mercer County, he combined his study of law with his other pursuits to such purpose that he was admitted to the bar on August 5, 1852. On April 20, 1853, he left Celina with his family for southeastern Minnesota in the hope of improving his health, which never had been robust.

Giles James Sheldon's first marriage was to Elizabeth Cullum. His second marriage was to Margaret Roberts, of Celina, Ohio, a native of the state, of Welsh and Swiss descent. Of the second marriage there were seven children: James Giles Sheldon, a railway engineer; Elizabeth Sheldon (Mrs. Reuben) Hoag, a teacher; Celina Sheldon (Mrs. H. J.) Herzog; Henry Robert Sheldon, a farmer; Sumner S. Sheldon, a farmer; Florence H. Sheldon Carrick (wife of The Reverend A. R. Carrick), and Julia Sheldon (Mrs. W. J.) Evans, who in 1941 was the only one living.

On June 27, 1853, to repeat, Dr. Sheldon arrived with his family at Wild Cat

Bluff or Brownsville, Houston County, where he soon bought 160 acres of land for $600. As there were only four families in the settlement, his medical skill was not demanded immediately to any great extent, but his legal knowledge soon was useful, for within a year he was presiding as judge at the first court held at Brownsville. And obviously he entered into community life, because on July 4, when a great barbecue was to be given at Brownsville in celebration of the day, Dr. Sheldon was one of the committee in charge of the arrangements. The following year, on November 9, he moved with his family to Mound Prairie Township and there, near the village of Mound Prairie, he established a large farm, the working of which in later years he turned over to his sons. It was characteristic of him throughout his career that he combined with his professional pursuits the occupation of farming.

Dr. Sheldon's broad professional training made him a most valuable citizen in the pioneer region. As noted, he was elected the first judge of probate in Brownsville, in 1854; in 1860 and again in 1862 he was elected court commissioner. Early convinced of the necessity of establishing settlements, he surveyed, platted and named the village of San Jacinto, secured for it a post office and acted as the first postmaster, and in the same period of the fifties he platted the village of Sheldon, in Sheldon Township. In 1859 he was one of the second board of supervisors of Houston County and, when the change was made from the system of government by supervisors to that of commissioners, in 1860, he was again a member of the county board. In 1863 he served as county coroner.

An able physician and surgeon, Dr. Sheldon often was called in consultation by other physicians in difficult cases. In his diaries, mentioned previously, he wrote of Drs. Train, Fox, Gates, White, Cowles, O'Connor, Bowen and Pope. An untiring student, a cultured and well-educated man, he possessed a good medical and general library, at one time the finest in the county. In the years in which the question was an issue, he was a vigorous opponent of Negro slavery.

On the farm in Mound Prairie Township, serving the community in many capacities, Dr. Sheldon lived until 1880, when death resulted from a stroke. Well-deserved tribute was paid him by all who knew him in recognition of his ability, his ambition and public spirit, the multiple civic and professional services he rendered in spite of his handicap of frail health, and his unfailing consideration of the sick and distressed. Mrs. Sheldon survived her husband many years and died in 1908, having shared with him the honor and esteem of the community.

Dr. Sheldon left many diaries, books, letters and instruments of historical interest and value which at the time these notes were written were in the possession of his grandson, Sumner S. Sheldon, Jr., of Houston.

Rolland Fuller Sheldon, who was to combine the offices of physician and clergyman, was born at Grafton, Vermont, in 1825, the son of Abraham Curtis Sheldon, who was a lineal descendant of Isaac Sheldon.

Isaac Sheldon, around 1640, emigrated from Derbyshire, England, to New England, America, and was one of the founders of Windsor, Connecticut, and Northampton, Massachusetts. To him and his wife were born fourteen children, nearly all of whom married and left children, who dispersed into various parts of the country, so that the Sheldon stock has been widely scattered. Of this family of fourteen, Abraham C. Sheldon was graduated from Yale University in 1812, taught in Middlebury Academy, Vermont, and about 1831 removed from Vermont to Portage, New York. When he was killed, in February, 1834, in felling a tree on his own land, he left his wife and seven small children to face pioneer existence in the great forest region of western New York. The children held together under the influence of their intelligent and able mother, won through to education and useful lives.

Rolland Fuller Sheldon became a master in many lines of work. He was carpenter and blacksmith, musician and music teacher, and in these and various other capacities he earned his way to the degree of Bachelor of Arts at the Baptist University of Rochester, New York, which was then a small institution of less than 300 students. Graduated in the class of 1856, he stayed on in Rochester through 1857 to study theology and medicine in preparation for becoming a foreign missionary. The university did not offer a medical course and Mr. Sheldon studied and practiced medicine with one of the leading physicians of the town. In 1858, therefore, when The Reverend Mr. Sheldon and his bride, Mary Adel Sheldon, arrived at the village of Sheldon, Sheldon Township, Houston County, Minnesota, as home missionaries, (having given up the idea of foreign service) of the Baptist Church, this young physican-clergyman was the possessor of as thorough preparation for the practice of medicine as were many of his solely medical contemporaries.

The village of Sheldon, which Dr. Sheldon made his headquarters, had been founded in 1854 by one of his cousins, Julius C. Sheldon, of Suffield, Connecticut, and platted by Dr. Giles J. Sheldon, to whom he is said to have been distantly related. Beautifully and well situated though it was, accessible by valleys in all directions, the settlement did not become the county seat, as was hoped by its founder, but became one of the disappointed hamlets left to one side by the railroad in 1866. Letters and documents in the possession of Dr. Sheldon's son show that this pioneer physician and clergyman traveled with horse and buggy not only in his own township and county but also over much of southeastern Minnesota, carrying his ministry of grace and healing from the Mississippi River as far west as Carimona and Cherry Valley, in Fillmore County, and as far north as Chatfield, in Fillmore and Olmsted Counties, and Winona, in Winona County. He was a leader in the settlement and organization of this entire territory. In 1860 he was an ardent advocate of Abraham Lincoln for President and, when the Civil War broke out, he was active in raising money and recruiting men for defense of the Union; although because of his dependents, a wife and two small children, he did not enlist; he was unremitting in his patriotic efforts. His younger brother, Abraham Sheldon, of Cherry Grove, enlisted in the army for defense of New Ulm and Fort Ridgely during the uprising of the Sioux Indians in 1862.

When an epidemic of black measles in virulent form broke out in the Norwegian settlements of Black Hammer Township in 1863, Dr. Sheldon was tireless in the campaign to combat the lethal disease, carrying medicine and counsel to afflicted homes, as was customary in the office of the physician in those days. Repeatedly exposed to the disease and overweary, he was already sickening when one night he was caught in a violent rainstorm as he drove home from an errand of mercy to Black Hammer. The next day he came down with the measles and on April 3, 1863, after a few days of raging fever and delirium, he died. He was buried in the old Pioneer Cemetery in southwestern Caledonia in the lot adjoining that of the Trask family, who were among his closest friends.

Dr. Sheldon kept always a large supply of medicines in an old-fashioned red chest that he and his wife had brought from the East, and after his death Mrs. Sheldon dispensed these drugs as he had taught her to do. In the succeeding years, during the Civil War and later, Mary Adel Sheldon, a well-educated woman, taught school in Caledonia, Yucatan, Winnebago Valley, Looney Valley, Sheldon and Houston, all in Houston County. There remains record in old files of Caledonia newspapers of a great patriotic parade, during the war, of all the children of the Caledonia schools, led by Mrs. Sheldon.

In 1943 there were living, among other relatives of Dr. Rolland Fuller Sheldon, his son, Addison E. Sheldon, Superintendent-Secretary of the Nebraska State Historical Society, at Lincoln; his grandson, Philip Sheldon, and his great grandson, Keith Sheldon, both, also, of Nebraska.

Trond Neilson Stabo, born in Norway in 1869, was graduated in 1894 from the Fredericiana University (Kongelige Frederiks Universitet) at Christiania (Oslo). Not long afterward he migrated to the United States and came to southern Minnesota, and on October 8, 1895, he was licensed to practice in the state. On the following October 17 the certificate was recorded in Houston County.

A resident of Spring Grove, Dr. Stabo was a well-known practitioner throughout the county and in contiguous counties. It has been recalled that he was probably one of the first in the county to perform surgical operations for appendicitis, and that he owned one of the first automobiles in the region of Spring Grove and Caledonia. In those days, according to an early citizen of Caledonia, there were no real automobile mechanics and in the smaller towns when anything went wrong with an automobile, the blacksmith worked on it. Dr. Stabo, on one occasion having difficulty with a new car which was giving out clouds of black smoke, was insistent that the magneto should not be touched because, he said, it was sensitive, as stated in the directions that had come with the car. When the difficulty had been corrected as a result of tactful adjustment by the mechanic, who it happened was not a blacksmith, and the doctor was able to continue his rounds with a perfect running car, he returned and paid generously for the correction.

Dr. Stabo was a member of the Houston-Fillmore County Medical Society, the Minnesota State Medical Association and the American Medical Association. In 1907 he moved to Decorah, Iowa, where, in 1943, he was still practicing.

Of **E. D. Stewart,** said to have practiced in Houston County, information has not been available.

Gilbert Thomas was listed in a commercial directory of the late seventies as a physician in the village of Yucatan.

Isaac Whittington Timmons, born on October 11, 1833, on a farm near Chillicothe, Ross County, Ohio, was to become one of the well-known pioneer physicians of southern Minnesota, in Houston, Fillmore and Winona Counties. He was the son of Thomas Whittington Timmons, whose father had come from England with Lord Baltimore and had settled in Baltimore (at first called St. Marysland), Maryland. Isaac Timmon's mother was Hetty Draper Timmons, educated in Philadelphia, the daughter of a Quaker family of Delaware which included a son who became a physician. Thomas Timmons married a second time, a younger sister of Hetty Draper, and of the marriage there was one daughter, Hester.

Isaac Timmons received his early education in the private and public schools of Chillicothe until, in 1851, when he was eighteen years old, he took up his residence in Matamore, Illinois. About three years later in Matamore it happened that he was obliged to go into court for settlement of a dispute, and his attorney was none other than Abraham Lincoln. The difficulty was occasioned by the fact that Mr. Timmons had been elected to the office of town clerk two days before he was twenty-one years of age. He was notified, on his birthday, of his election and on the following day, after being duly sworn in, he gave bonds. Mr. Lincoln, when the legality of his assumption of office was contested, offered his services as defending attorney and brought Mr. Timmons through a victor. At that time Mr. Lincoln remarked that the boy had begun office-seeking early in life and added, when told that friends had been responsible for the candidacy, "It is well to have a good lot of friends when you run; I have met defeat once or twice because I didn't have quite enough."

In the middle fifties Isaac Timmons studied medicine under the preceptorship of one of his brothers, who was a physician, but the instruction was interrupted when in the late fifties he moved to Cairo, Illinois, to engage in the mercantile business with another brother. In Cairo, at the southern tip of Illinois, separated from slave-holding territory only by the Ohio and the Mississippi Rivers, he served as a member of the common council in 1860 and 1861 at the time, just before and after the outbreak of the Civil War, when excitement ran high along the border. By 1862 he had settled in Centralia, Illinois, where for the next eight years he was employed in the service of the government as deputy collector of internal revenue for some eleven counties. During those years he was associated with Robert Noleman, uncle of William Jennings Bryan, and grew to know Judge Bryan, father of "Little William," who then was four or five years of age.

During his residence at Centralia, Isaac Timmons studied law and served as police justice, but law did not appeal to him and he returned to the study of medicine. In 1870, after a course of study of three years at the Homeopathic Medical College of St. Louis, Missouri, he was graduated with the degree of Doctor of Medicine, and in the same year he entered the state of Minnesota to practice medicine for a short time in the little village of Money Creek, in Money Creek Township, Houston County.

For the next twelve years he was, as his daughter has described him, "the proverbial rolling stone." In the early seventies he went to Winona, where he practiced in partnership with Dr. T. Pierce. The pioneer river town disappointed him, however; the levee was a sand and gravel bank and the streets were full of mud and holes. A few plank walks were to be found, but a "general untidy state of affairs existed." Years later he was very proud of Winona, and justly, for he had played a part in building up the beautiful city.

After two years in Winona, in 1877, Dr. Timmons returned to Houston County, this time to the village of Houston, where he stayed until 1881. Besides carrying on a general medical practice he served as justice and as county physician. In 1881 he went to North La Crosse, Wisconsin, but on learning that Chatfield, Fillmore County, Minnesota, was in need of a physician, he settled there for a year and a half. In the early spring of 1884 he returned to Winona where he built up a successful practice and remained there until his death thirty years later. After 1887 he practiced under the Affidavit Ruling.

Isaac W. Timmons was married, in 1857, to Ursula E. Robinson, of Chillicothe, Illinois. Dr. and Mrs. Timmons had six children, Virginia, Jessie, Kate, Lida, Luetta and John W. Timmons. Mrs. Timmons exerted a gentle and understanding influence on her husband's career. In later years the doctor always referred to their life together as "a continual Indian Summer." In 1907, when Dr. and Mrs. Timmons celebrated their golden wedding anniversary in Winona, all but two of the children were living and present. In 1941 only one, Luetta (Mrs. C. A. Peiffer, of Winona) was living. The son, John Whittington Timmons, was for many years, until his death in 1918, a teller of the First National Bank of St. Paul. Kate died in 1937 at Long Beach, California, at the age of eighty-two years. Lida, the wife of C. F. Spencer, who was editor of the *Willmar Journal* for many years, died at Willmar, Minnesota, in 1941. Virginia ("Jennie"), who did not marry, taught school for many years; she died in Kansas City previous to 1907. Jessie, who was married, also died before 1907.

Dr. Timmons was a great reader and student who always took a keen interest in politics. He used neither alcoholic liquor nor tobacco, was a member and supporter of the Methodist Church, and was generous in giving his professional services to those who were unable to pay.

On October 9, 1912, two days before his seventh-ninth birthday, Dr. Timmons died from a stroke.

Hamilton B. Train was born in St. Lawrence County, New York, on April 26, 1825. By 1847 he was in Wisconsin, studying medicine and, after he had settled in Fond du Lac, preaching the gospel. Because of ill health he was obliged to give up the ministry and shortly thereafter he enrolled at Appleton University for a period of medical study. After his return to Fond du Lac he was married to Angelina Clark, on March 27, 1850. Dr. and Mrs. Train had four children, of whom two were living in 1882 (the date of the last published comment available).

In 1856 Dr. Train, a physician of the regular school, came to Minnesota and in the following year to Hokah, in Hokah Township, Houston County, where Dr. Charles Jenks was the only practitioner of medicine, having arrived a short time previously in 1856. Hokah was then at the beginning of a period of mounting prosperity which continued until 1872 when, with the reduction in status of the railroad shops and the corresponding reduction in population and business enterprises of all types in the community, a permanent decline began. Dr. Train, well established, early had built up an excellent practice and he made Hokah his permanent home. In 1880 and 1881 he was serving as health officer for the township during an outbreak of smallpox in the locality. After the "Diploma Law" of 1883 came into effect he practiced under a state exemption certificate. He died in Hokah on July 28, 1891, thirty-four years after his arrival in the village. Mrs. Train continued to make her home in the village after her husband's death.

Dirk Van Krevelen was born in Holland in 1828. His preliminary education and his academic collegiate training he received in his native country and his medical education, at the universities of Germany. It has been said that he arrived in Baltimore, Maryland, in 1854 and that soon afterward, accompanied by his family, he went to Valparaiso, Chile, on appointment as superintendent of a marine hospital there. During a political and religious uprising in Chile in 1858 and 1859 he, together with his wife and children, was rescued from the city by a sloop-of-war, but only after they had experienced severe difficulties and hardships; ultimately they returned to Baltimore. During the Civil War Dr. Van Krevelen served as surgeon on the field and in hospitals. After the war he spent a year in Europe in medical study and in renewing old friendships, and on his return to the United States, settled in Grand Rapids, Michigan, and there practiced medicine.

In 1849 Dr. Van Krevelen was married for the first time. His wife died in 1867 and in 1873 he was married to Gertrude Edons, like himself, a native of Holland.

By 1879, at the latest, and perhaps a year or two earlier, he was in Belle Plaine, Minnesota, and it has been said that he moved there from Hokah, in Houston County. An able physician and a well-liked, genial man in Scott County, as elsewhere, he won friends and confidence and had a good practice. In 1880 he served as county coroner. By 1888 he had settled in Carver County, near New Germany, where he bought a general store, which he proceeded to expand. Not of mercantile taste, however, he soon sold out and next chose Waconia as his field of professional endeavor. In 1897 he moved with his family from Waconia to Silver Lake, in McLeod County. In the official register of 1883-1890 of licensed physicians in Minnesota he was listed, without specified residence, as the holder of an exemption certificate.

M. J. Veiling (Velling?) probably was one of the first few physicians, certainly he was among the earliest group of physicians, in Caledonia and in the county. It appears from early records that he was the second coroner, in 1857, of Houston County and that he was succeeded in the office some time prior to 1868 by Drs. Harvey B. Laflin and Timothy A. Pope; Dr. Veiling served a second term in 1862. It is hoped that more will be learned about him, perhaps through reports on early physicians in different parts of the state.

Charles H. Wagner, possibly the Dr. Charles H. Wagner who was more closely identified with Fillmore County in later years, was listed in a business gazetteer of 1880 and 1881 as resident in Money Creek, Houston County.

S. C. White was mentioned by Dr. Giles J. Sheldon in his diaries as a contemporary physician in Houston County, obviously some time during the period between 1853 and 1880. It is known that in 1881 and 1882 Dr. White was serving as health officer in the village of Hokah at the same time that Dr. H. B. Train was health officer for Hokah Township and that Dr. W. W. Holden was health officer for Union Township. Not to confuse the issue, but rather to note the possibility of a misprint in initials of the same man, it should be stated that in the autumn of 1871 a Dr. A. C. White, physician and surgeon, lately of Muskegon, Michigan, opened an office in Preston, Fillmore County. Changes of residence from county to county were common among physicians in those years and it is possible that Dr. White subsequently settled in Houston County.

(To be continued in the March issue)

President's Letter

Two items of economic development in medicine, which have recently come to the attention of the Council and officers of the Association, are of such vital concern to the entire membership that comment upon them now seems to be an urgent necessity.

The first of these is the prediction that the Wagner-Murray-Dingell Bill may pass at this session of Congress. To accomplish this, the authors of the bill have deleted from it all clauses involving the appropriation of funds. This has been arranged to ensure consideration of the bill by a committee friendly to it. Favorable action on a bill by the committee to which it is referred is followed by its introduction to the entire Senate with the recommendation by the committee that it be passed.

These facts mean that any opposition to the bill will have two opportunities to defeat it. The first opportunity will be on the floor of the Senate where it is subject to debate by the entire Senate prior to its being voted upon. If the opposition to the bill can summon enough strength on the floor of the Senate, the act can be defeated by general vote of that body. In spite of a press poll of the Senate indicating the bill's defeat, some predictions are that this is not likely. The second opportunity to prevent its full enactment will be in defeating the appropriation bill which will have to be passed later to provide the funds necessary to carry out its provisions. At present, the latter course appears a more likely point of obstruction than defeat of the initial bill on the Senate floor.

It should be borne in mind that under the present system of medicine in the United States, health, mortality and longevity are better than those of any country in the world. The issue in the Wagner-Murray-Dingell Bill is supposedly the reduction in cost of medical care. In every instance where compulsory Health Insurance has been inaugurated to reduce the cost of medical care, quality of medical care has been sacrificed. So, in the present instance of the Wagner-Murray-Dingell Bill, the important fact is that not only is the American System of Medicine at stake, but, of far greater importance, the actual health, lives and longevity of the people of this country are being voted upon in the halls of Congress.

The second matter of economic importance to the profession is the reorganization of veteran medical care. Veterans Hospital facilities in Minneapolis are being integrated with those of the Medical School and University Hospital. Veterans Administration branch offices are being established throughout Minnesota. Medical care of the veteran in his home community may be provided by the Veterans Facility in accordance with a plan now being arranged by a committee of the Minnesota State Medical Association.

At the Veterans Hospital in Minneapolis, all physicians will be enrolled in residencies or fellowships with University Hospital and Medical School faculty members serving as consultants or senior consultants. All gradations of physician appointments will be co-ordinated with postgraduate medical education so that each staff member may, under the guidance of proper authorities, ultimately become a diplomate of some specialty board.

In order to facilitate medical care of the veteran in his home locality, branch and administrative Veterans Facility offices are to be established in a number of the cities scattered throughout the state. Through these offices, physicians called in attendance of a veteran in his home can secure, by telephone, permission to provide medical care. It is expected that both administrative and medical personnel will be found in the branch offices.

For the preparation of details of a program to render medical care to the veteran in his home community, a committee of physicians has been appointed for the Minnesota State Medical Association. The committee consists of physicians who served in this or the first World War. All sections of the state and all branches of the military service are represented on the committee. Fee schedules for such veteran medical care are being promulgated. Service connected and nonservice connected disabilities are receiving consideration. As soon as a comprehensive, detailed plan is completed, it is to be sent to Washington for approval. All of these developments are in the process of completion. Details will be provided as they are available.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

IMPROVED VETERANS' FACILITIES

THE veteran of World War II is going to be provided with the best possible hospital care. For some time considerable criticism has been voiced of the quality of care being furnished by the Veterans' Facilities.

Recently the President signed a bill which provided for Medical and Surgical Departments in the Veterans Administration. More than that, arrangements have already been made for the employment of specialists on certain medical school faculties on a half-time basis to care for these veterans. These new appointments have already been made in Minnesota by the Dean of the Medical School who with a medical faculty committee will supervise their activities. Civil Service will no longer designate appointments. It is understood that medical personnel in the Veterans' Facilities who hold their appointments under the Civil Service will be retained unless there is good reason to dispense with their services. Even though Civil Service appointments eliminate the undesirability of political appointment, it has long been recognized that the difficulty in dispensing with Civil Service appointees is at times a handicap.

Residents and interns at these Veterans' Hospitals will be appointed by the medical school which will have direct supervision of their activities. The value of residencies and internships in these hospitals to recent graduates and returned medical officers is likely to be secondary to none, and the new setup helps solve a pressing need. This presents a happy solution of a difficult problem.

Steps are being taken for a better solution of the care of the returned veteran who is in need of medical care for disabilities sustained in service but who does not perhaps need hospital care, who lives distant from a Veterans' Hospital or for whom perhaps there is no room at present in a Veterans' Hospital. There will undoubtedly be two or three times the demand for medical care on the part of veterans of World War II as there were following World War I. How can this best be provided? It is the idea of Major General Hawley, chief medical director of the Veterans Administration, that the medical profession of each state present their own plans for his consideration.

The medical profession of Michigan has already submitted its plan whereby the members of the Medical Services, Inc., of Michigan will provide medical care for veterans outside of the Veterans' Hospital on a fee basis acceptable to the members of the Michigan State Medical Association. Steps are being taken to provide hospital care also through the Blue Cross hospital organization in Michigan.

Personally, we can see no need for any other organization than the State Medical Association when it comes to considering ways and means for providing this medical service for Veterans of World War II who do not require care in a Veterans' Hospital. All that would be necessary would be an agreement on fees for certain services and an indication of willingness on the part of the member to fill out certain forms. We have a committee of our State Medical Association working on the project now.

Following World War I methods adopted for providing for disabilities of veterans were often extravagant in time and money in that veterans were required to travel long distances to receive medical aid. Utilization of the services of the veterans own medical advisor would eliminate this unnecessary expense. The local physician can care for veterans suffering from certain disabilities in the home or local hospital, without necessitating care in a Veterans' Hospital.

SCHEMM TREATMENT OF EDEMA

IN April, 1942, Dr. F. W. Schemm of Great Falls, Montana, read a paper[1] before the annual meeting of the American College of Physicians, in Saint Paul, on the value of a high fluid, a low salt and sodium intake and an acid ash diet in patients suffering from edema from any cause and especially from heart disease. Before this paper was published another[2] by the same author appeared. In spite of the array of cases scientifically studied and the most favorable results reported, the profession has been slow in accepting his contribution.

In spite of numerous authoritative statements which have appeared in the literature during the past hundred and fifty years on the value of water as a diuretic, the medical profession today is rather generally disposed to restrict fluids in edema from any cause. This is apparently wrong and not only adds to the discomfort of the patient but may even result in a dehydration of tissue cells and a lessening in the elimination through the kidneys of the sodium chloride and sodium bicarbonate contained in the edema fluid.

Schemm argues the logic of reducing to a minimum the sodium chloride and soda intake in the diet and prescribing an acid ash diet to aid the neutralization and elimination of the sodium bicarbonate in the edema fluid, although the acid normally formed in the tissue will be sufficient in many cases. He sometimes adds acid in the diet in the form of dilute HCL acid or ammonium chloride to assist this process.

Foods that produce an acid ash are meat, fowl, fish, eggs, cereals (except corn) prunes, plums and cranberries. All other foods yield an alkaline ash.

His treatment consists of forcing liquids, particularly water, and giving a neutral diet consisting of low salt, low sodium and an acid ash diet. No food containing salt and no soda are allowed. Small amounts of milk and certain vegetables and fruit are allowed in addition to the acid ash foods.

Digitalis, when indicated, should of course be continued. Murcurial diuretics may also be used although they are seldom needed in obtaining diuresis.

Schemm's detailed reports of his success are most convincing, and trial of his method has confirmed his observations.

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1. Schemm, F. R.: Am. Int. Med., 17:952, (Dec.) 1942.
2. Schemm, F. R.: A high fluid intake in the management of edema. Am. Int. Med., 21:936, (Dec.) 1944.

DRUGGISTS IN DISTRESS

PROVIDING the druggist with prescriptions for narcotics before the prescription is filled oftentimes causes delay or inconvenience for the physician or patient or both. When the prescription is for a simple cough syrup containing codein which is needed to help the patient through the night, the insistence on the part of the druggist that he have the written prescription before he delivers the medicine may seem unreasonable to the physician.

Nevertheless, the Bureau of Narcotics is responsible for the proper dispensing of narcotics and has established the following regulations:

> **Article 172—Bureau of Narcotics Regulation No. 5**
>
> *Telephone Orders*—The furnishing of narcotics pursuant to telephone advice of practitioners is prohibitive, whether prescriptions covering such orders are subsequently received or not, except that in an emergency a druggist may deliver narcotics through his employe or responsible agent pursuant to a telephone order, provided the employe or agent is supplied with a properly prepared prescription before delivery is made, which prescription shall be turned over to the druggist and filed by him as required by law.

There is reported to be a scarcity in the illicit traffic of narcotics. The addict will usually go to any length to satisfy his craving. It is not unusual for him to call the druggist, posing as a physician and ordering a narcotic. There is good reason, therefore, for insistence on the part of the Bureau of Narcotics that the druggist have the physician's prescription in his hands before he furnishes the narcotic. Too often the physician becomes irritated with the druggist who seems to be lacking in co-operating with his patron, the physician. The Narcotics Bureau, however, is clamping down on druggists who fill narcotic prescriptions over the telephone. Under the circumstances, one cannot blame the druggist if he is meticulous in observing the letter of the regulation.

PENICILLIN ACTION NOT NEW

AN interesting communication from Dr. Russell F. Maddren appeared under Correspondence in the *Journal of the American Medical Association* for January 19, 1946. He refers to a communication from the physicist, John Tyndall, to the English Royal Society, which was published in the Philosophical Transactions in 1876.

Tyndall reported the clearing of exposed tubes containing bacteria and his inability to find any active life in the bacteria in tubes contaminated with surface growths of penicillium glaucum.

Thus the fact that the mold Penicillium inhibits the growth of bacteria was recognized several years ago, but the therapeutic significance of this fact was not recognized until recently. Truly, knowledge comes but wisdom lingers.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

NATIONAL HEALTH CONGRESS PROPOSED

A National Health Congress, as an answer to the threat of government control of the health professions, was the subject of a set of resolutions presented before the annual meeting last month in Chicago of the AMA House of Delegates.

According to Dr. E. S. Hamilton, Illinois, who introduced the resolutions, such a congress is urgently needed to prevent regimentation of the medical profession, to preserve and extend health services for this nation's citizens and to provide a co-ordinating body for all agencies in the health field.

These resolutions represent the first step in making the National Health Congress more than just an idea. It was proposed:

1. That the House of Delegates "recognize the need for a National Health Congress, representative of the medical, dental, hospital, nursing, pharmaceutical and allied professions, and that it approve the creation of such a co-ordinating body."

2. That the House of Delegates instruct the Council on Medical Service and Public Relations to take the initiative and "bring together interested groups to organize and incorporate *immediately* a National Health Congress."

The resolutions were referred to the Reference Committee on Legislation and Public Relations, which reported the resolutions to the floor where they were subsequently passed.

What Is the National Health Congress?

The idea of a National Health Congress has been in the making for a long time. Physicians will be hearing more and more about it in regard to the controversy between those favoring federal control of health services and those of the health professions who contend that this nation's health services must and shall remain in free hands.

Dr. A. S. Brunk, former president of the Michigan State Medical association, was instrumental in formulating a concrete plan for the setting up of a National Health Congress. Collaborating with John R. Mannix, director, Plan for Hospital Care in Chicago, and John F. Hunt, vice president of Foote, Cone and Belding, Chicago, he presented an organizational outline in the October, 1945, issue of "The Modern Hospital." It is this outline that will be described here.

Among the several objectives of a National Health Congress presented in this report are: (1) keeping health protection for the American people on a voluntary basis; (2) insuring the public complete protection regardless of financial status or location; (3) co-ordinating all health agencies and activities; (4) providing a plan for voluntary prepayment of health protection at a cost equal to or lower than any national compulsory health insurance plan; (5) educating the public in health matters with the object of improving national health standards and interesting the public in taking advantage more and more of the facilities for health improvement; and (6) providing incentives for persons engaged in all phases of health work.

How Would It Be Organized?

According to the proposal, the National Health Congress would be patterned after our national law-making body, so that it would not only serve as a forum for free and open discussions on health matters, but would also be endowed with the power to act for the nation's voluntary health forces, which would create it.

As for the membership, it is proposed that the Congress contain one or more representatives of the hospital, medical, dental, nursing and pharmaceutical associations of each state as well as industrial, labor and agricultural associations from every state and representatives from the senate, the house of representatives and the United States Public Health service.

The National Health Congress would concern itself with all measures affecting health care at the national level. The Congress would cover any plan for prepayment of health care by an individual or family unit, and it would recommend to federal and state governments how they might participate in health activities, provide for research and extend benefits to public charges. To carry out the directives of the Congress, Dr. Brunk and his colleagues propose that a National Health Administration be set up under the direct control of the parent organization.

Must Have Permanent Quarters

The planners of the National Health Congress recommend that the Congress have permanent headquarters in some city equally accessible to all members as well as capable of providing facilities for carrying on the administrative functions of the Congress. The body would convene once a year, at least, to consider problems of extension and improvement of the nation's health care; and, since it would be restricted to matters of health alone, it is not anticipated that members will find that serving with the Congress interferes too much with private affairs. Above all, the Congress must have the *power to act* so that the greatest amount of work can be accomplished in the shortest possible time. To expedite the work of the Congress, a system of committees would be set up to study individual proposals before they are voted upon. In this and in other ways, it would borrow the best aspects of the national legislative congress. This, then, is one plan offered as a counter-proposal to the compulsory health insurance plan outlined in the Murray-Wagner-Dingell Bill.

Organization of a Health Congress Forthcoming

From the action recently taken by the AMA, it is evident that machinery will be set in motion shortly to create a National Health Congress, perhaps one similar to that proposed by Dr. Brunk and his associates. In a news letter sent out January 15 by the Council on Medical Service and Public Relations to officials of state associations, the Council reported that the formation of a National Health Congress is one of the very important tasks it is commissioned by the House of Delegates to carry out during 1946, another being the development of a specific national health program. In the words of the Reference committee which presented the resolutions, a National Health Congress "will undertake to bring to all the people of this nation the complete benefits of modern medical-dental science and the finest hospital facilities, will arrange for budgeting the cost of such services at monthly rates within the financial means of all Americans through voluntary, non-profit health plans and will work speedily for the institution of such voluntary non-profit health plans in those places or localities where they do not now exist."

Citing the need for immediate establishment of such an organization, the resolutions stated further: "While each of the groups in the health field has its own organization, working independently for the preservation of the American system of health care, an over-all body or council is necessary to integrate the necessary collective thinking and activity of all organizations or units." For that reason a serious and immediate need exists to develop a working liaison or congress of all agencies in the health field to secure the most effective results of action and public education.

PUBLIC HEALTH PROFESSORSHIP CREATED AT "U"

The University of Minnesota was recently on receiving end of a gift of $150,000, which will finance the University's first permanently endowed professorship. The donor of the gift was the Mayo Properties association.

Salary for the post, to be known as the Mayo Professorship in Public Health, is to be not more than $10,000 annually, and will probably be filled by July 1, according to University authorities.

The University has one other named professorship, the George Chase Christian Professorship in Cancer Research. This chair is not permanent, however, although it is still being maintained by gifts received at the time of the liquidation of the Citizens' Aid society.

The school of public health, which will contain the new post, was created within the medical school two years ago from what was formerly the department of preventive medicine and public health. It will serve as one of this country's six regional training centers, where doctors, engineers and nurses in public health, studying at the graduate level, can become specialists.

VET HOSPITAL EXPANDS MEDICAL STAFF

The recent addition of 146 physicians, many of them nationally known men in their fields, to the Fort Snelling Veterans hospital staff is expected to make the hospital one of the nation's leading veterans' medical centers. A joint announcement of these additions to the staff and plans to have the University of Minnesota medical school take over most of the responsibility for medical services at the hospital was made by Dr. Harold S. Diehl, dean of medical sciences at the University; Carl D. Hibbard, manager of the Minneapolis veterans administration facility; and Dr. Harry E. Bank, chief medical officer at the veterans hospital.

Broad Plan Outlined

A broad program of improvement of facilities of the veterans hospital has been outlined which will add to the staff 35 men to hold the rank of senior consultant, 43 to serve as consultants and 68 resident physicians or fellows. The program provides:

1. Direct supervision of all appointments of doctors to the hospital staff by the dean of the University medical school so as to raise the hospital standards to the level of those of the medical school;
2. The addition to the staff of specialists from all parts of the country to be supervised by a University committee, headed by Dean Diehl;
3. The establishment of a fellowship system and the appointment of 68 "highly selected" University graduate doctors under the system to work full-time in the hospital to receive specialists' ratings; and
4. The appointment of physicians by merit and ability rather than on the basis of civil service status, veterans to be given preference when possible.

Aim to Modernize System

It is reported that the Veterans hospital at Fort Snelling is the second in this country to modernize its system. The purpose of the modernization, according to veterans administration authorities is "to insure that veterans will obtain the same up-to-date medical care and treatment that they would obtain in hospitals attached to the nation's leading medical schools and centers."

Dr. Diehl puts it this way: "This plan will give the veterans the kind of treatment I'd want my own son to have."

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Minneapolis Osteopath Pleads Guilty to Criminal Abortion

Re State of Minnesota vs. Madison J. Hampton

On January 9, 1946, Madison J. Hampton, fifty-nine years of age, and licensed to practice osteopathy in the State of Minnesota, entered a plea of guilty in the District Court of Hennepin County, to an information charging him with the crime of abortion. Hampton, who for the past year had maintained an office at 1406 W. Lake Street, Minneapolis, and whose office for fifteen years previous to that time was in the Masonic Temple Building, Minneapolis, was sentenced by the Hon. Arthur W. Selover, Judge of the Hennepin County District Court, to a term of one year in the Minneapolis Workhouse. Upon the recommendation of Mr. Otto Morck, First Assistant County Attorney of Hennepin County, and F. Manley Brist, attorney for the Minnesota State Board of Medical Examiners, Judge Selover stayed the sentence upon condition that Hampton close his office and refrain in every manner, from practicing osteopathy and violating the laws of the State of Minnesota.

Hampton was arrested on December 13, 1945, following an investigation by the Minneapolis Police Department and the Minnesota State Board of Medical Examiners into Hampton's activities. On December 4, 1945, a thirty-four-year-old married Minneapolis woman was admitted to General Hospital, suffering from peritonitis following a criminal abortion. The woman gave a statement naming Hampton as the person who performed the abortion upon her. Hampton, at the time of his arrest, gave a signed statement in which he admitted having performed the abortion by means of "a blunt wire silver instrument" which he used to curette the patient. Hampton also admitted in his signed statement that he was paid $65.00 for the criminal abortion, $35.00 of which he returned to the patient when it became necessary for her to be hospitalized. Hampton also admitted that he had been performing abortions over a period of the past ten years. Hampton stated that he graduated from the Des Moines Still College of Osteopathy and that he had been practicing in Minneapolis since 1920.

Minneapolis Surgical Society

Stated Meeting Held November 1, 1945

The President, Robert F. McGandy, M.D., in the Chair

Dr. Felipe Torres of Mexico, by invitation, spoke on "The Teaching of Medicine in Mexico and Its Evolution."

EXPERIENCES IN AN EVACUATION HOSPITAL IN ETO

R. E. HULTKRANS, M.D.
Minneapolis, Minnesota

The mechanical operation of an Evacuation Hospital of 400-bed capacity was discussed.

The personnel consisted of thirty-nine officers, forty nurses, and 217 enlisted men. During all of the campaign in France and Germany, this unit functioned in tents except for three months during the winter.

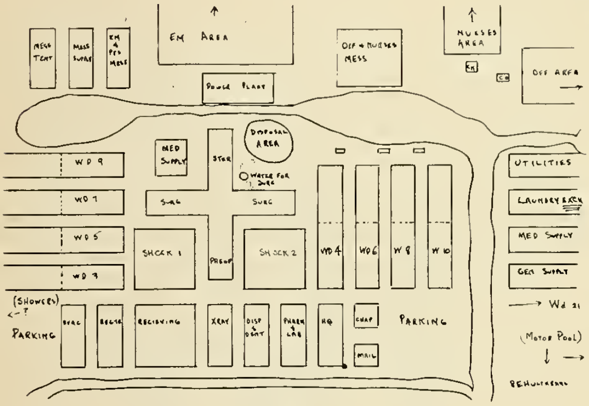

Mess Tent
Mess Supply
EM & Pts Mess
EM Area
Off & Nurses Mess
Nurses Area
Off Area
Power Plant
Med Supply
Ster
Disposal Area
Water for Surg
WD 9
WD 7
WD 5
WD 3
Surg
Surg
Shock 1
Shock 2
Preop
WD 4
WD 6
WD 8
WD 10
Utilities
Laundry Area
Med Supply
Gen Supply
Wd 11
(Showers)
Parking
Receiving
Xray
HQ
Chap
Mail
Parking
(Motor Pool)

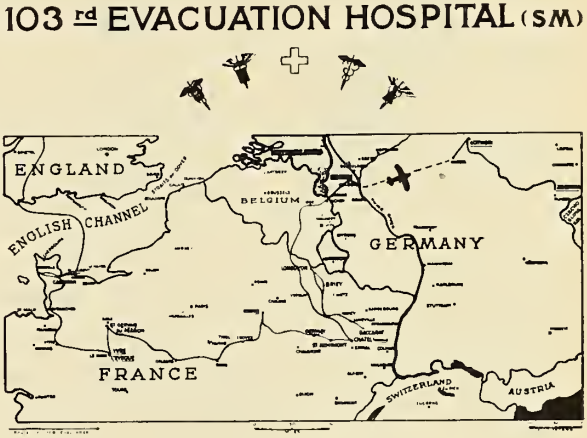
Fig. 1.

The hospital was transported from one station to another in trucks except at the time of the Rhineland campaign when the entire unit including equipment and personnel was flown in C-47 planes a distance of about 200 miles. The hospital was in operation at thirteen different stations in France and Germany.

Figure 1 shows an average setup of the hospital. The tents used were 40 by 16 feet. The large squares represent two such tents tied together at the sides and set up as a single tent. The double oblongs represent two tents tied end to end.

Figure 2 is a map of the intinerary of the hospital and shows the areas at which the hospital was in operation.

This type of unit proved highly efficient; 20,738 casualties were treated up to V-E Day with a mortality rate of slightly less than 3 per cent. All types of cases of both a medical and surgical nature were handled.


103rd EVACUATION HOSPITAL (SM)
ENGLAND
ENGLISH CHANNEL
BELGIUM
GERMANY
FRANCE
SWITZERLAND
AUSTRIA

20 July 1944—9 Aug. 1944—Carentan, France	1,105
10 Aug. 1944—17 Aug. 1944—Yvre-L'eveque, France	566
17 Aug. 1944—27 Aug. 1944—St. Gervais-duPerron, France	963
29 Aug. 1944—12 Sept. 1944—Normer, France	961
12 Sept. 1944—18 Sept. 1944—Germany, France	429
18 Sept. 1944—24 Sept. 1944—St. Remiremont, France	373
24 Sept. 1944—15 Oct. 1944—Chatel-sur-Moselle, France	1,869
15 Oct. 1944—21 Dec. 1944—Bricy, France	1,116
21 Dec. 1944—26 Jan. 1945—Longuyon, France	5,030
3 Feb. 1945—22 Feb. 1945—Baccarat, France	831
6 Mar. 1945—31 Mar. 1945—Bergheim, Germany	1,579
10 April 1945—20 April 1945—Gøttingen, Germany	1,756
20 April 1945—V-E day—Zeulenroda, Germany	1,127
Total Admission	20,738

Fig. 2.

Discussion

Dr. Charles Aling: I think after that excellent discussion by Doctor Hultkrans on Evacuation Hospitals, it is superfluous for me to add anything. I know you realize that no one can claim more experience in an Evacuation Hospital than he. His unit did see a tremendous amount of work. Our unit followed very much the same course, but were a little further north.

We found that we couldn't operate for a too long period of time, for after a definite length of time, one's efficiency would go down. We think we are unique in developing an eight-hour shift. We operated continuously for eight hours, except one-half hour for lunch. Each shift would alternate, reporting for duty every other eight hours. We found also that, by this shift, doctors and nurses had every other evening off. This would be early enough to obtain some recreation to help them forget their troubles. On a twelve-hour shift one would be on days for two weeks, for instance, necessitating the alternate shift being on nights for the same period.

CALCULATION OF DISABILITY IN THE EXTREMITIES

CARL O. RICE, M.D.
Minneapolis, Minnesota

In order to establish a method whereby disability can be standardized, it seems necessary to establish a few dicta by which to guide disability calculations so that the injured individual could be given the benefit of the doubt; whereby the compensation laws can be taken into consideration; and in which the insurance carrier can feel that he is not being required to pay excessively where a relatively minor disability occurred. These dicta are as follows:

1. In one hundred per cent industrial disability arrives somewhat short of 100 per cent uselessness. Most state industrial laws specify that loss of use of a member constitutes loss of that member. This seems reasonable for a member is of no industrial value if it cannot be used, even though it remains attached to the body.

2. Disability of a single joint is a relatively greater handicap to that member, when involved alone, than when involved with other joints. Therefore a single joint must receive a greater relative value in relation to the whole member than it receives when involved with one or more joints of that member. This is in harmony with the industrial law which specifies a greater total value for the loss of a thumb and all the fingers than for a hand.

3. Each joint of a member should be given a specific value in relation to the member as a whole. These relative values should indicate the disability to the member when the joint is completely rigid and unassociated with other disabilities.

4. Disability should be calculated upon objective measurable factors in order that some degree of constancy can be established. The degree of a motion is the most objective measurable factor. Additional estimates of minor value for disability may be added for other factors, not measurable, in order to allow for pain, loss of sensation, in-coördination, lack of power, et cetera. But if the serviceable range of motion is used as the measurable factor, then most of these other factors have been given due consideration. It has seemed to me that methods for culculating disability wherein pain, in-coördination, weakness, adaptability, et cetera, have been given unit values are too intangible to be much more than a good guess, accurate only in proportion to the experience of the physician who gives it.

5. The final percentage of disability in a member should be constant, no matter in what State it exists or in what occupation it occurs. The award for such disability may vary depending upon occupation or other factors, but that is a problem for the Industrial Commission to establish and not a problem for the physician. The loss of an index finger constitutes a loss of 100 per cent whether on a concert violinist or a ditch digger.

6. Disability cannot be measured within more accurate units than five or ten degrees. Therefore, the end result should not be calculated more accurately than in units of five. The end figure should be placed at the closed multiple of five. This I choose to call a disability unit.

It seems further necessary to determine the nature of the existing laws in order that disability evaluations may be compatible with the law.

The law indicates that compensation may be paid on the basis of a specified amount of money, for a specified number of weeks, for a specified loss of a member.

The law specifies these members: a thumb, a finger (index, middle, ring, and little); a hand, a hand and wrist, (or hand and forearm) an entire arm (upper extremity), a great toe, a toe other than the great toe (individual toes not specified), a foot, a foot and ankle, (foot and leg below the knee) a leg through the thigh, an entire leg (lower extremity).

Each disability estimation, no matter how small, must be expressed as a percentage value of one of these. The smallest member into which all of the disability can be included, is chosen as the one on which the disability must be calculated. If the disability lies within a finger, the calculation is based on a finger instead of the hand. If it lies within the hand it is based on the hand instead of the "hand and wrist" or "arm," et cetera.

It therefore becomes necessary to establish a relative value for the various portions of a member, in relation to a whole member, before it becomes possible to calculate disability to the whole of this member, as contributed by one or more of its units (Figs. 1, 2, 3, and 4).

Whenever multiple disabilities exist within one of these members, calculations must be made so that all of the factors can be interpreted in relation to the whole member without greatly exceeding 100 per cent.

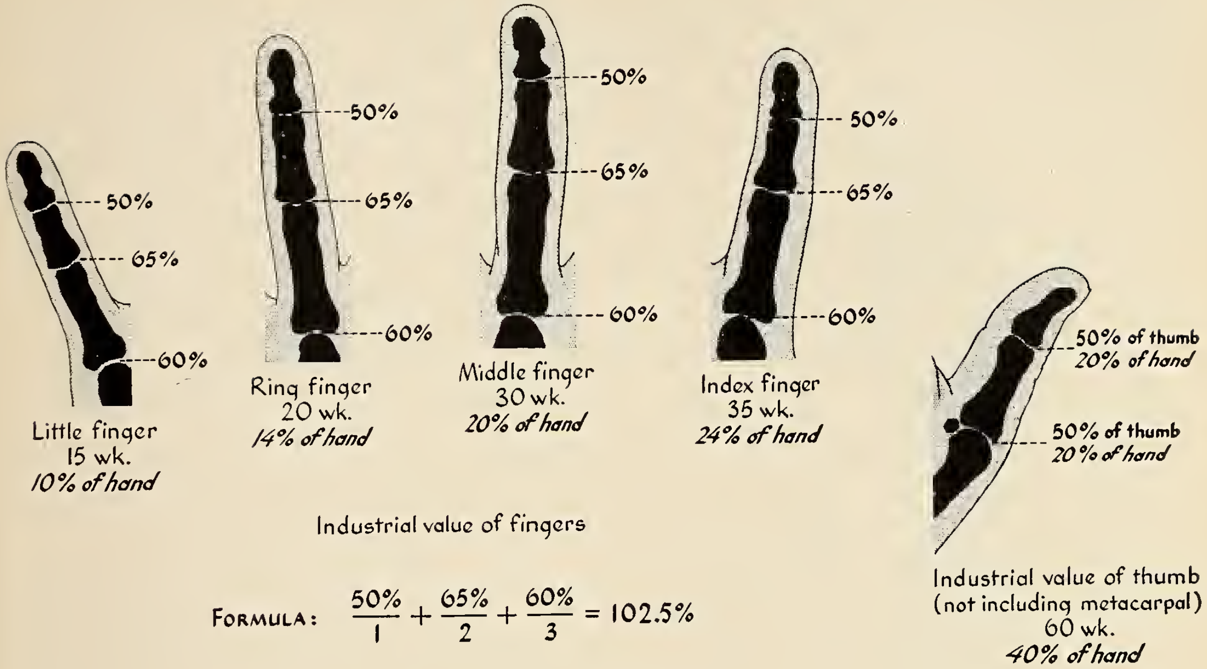
I shall endeavor to illustrate in these sketches the method by which disability is calculated. All of the details of my method of establishing these values cannot be completely explained in this brief discussion. More detailed explanations are now being prepared for a later publication.

In that the function of the phalanx is demonstrated through the motion in its corresponding joint, the disability of each phalanx can be calculated by simply determining the percentage of lost motion, out of a possible normal, using the opposite member for the normal standard.

If the distal phalanx of the thumb has lost 35 degrees motion out of a possible 70 degrees, the percentage of lost motion is 50 per cent (35/70 = 50%). A loss of 30 degrees motion in the proximal joint of the thumb out of a possible 60 degrees, likewise, constitutes 50 per cent loss of the proximal phalanx (30/60 = 50%).

The illustration in Figure 1 reveals that each of these joints has a value of 50 per cent of the thumb. Therefore, 50 per cent lost motion in each joint would reveal 50 per cent disability to the thumb on the basis of the following calculations:

50% (loss to distal joint) × 50% (value of distal joint) + 50% (loss to proximal joint) × 50% (value of proximal joint) = 50% (disability to thumb).

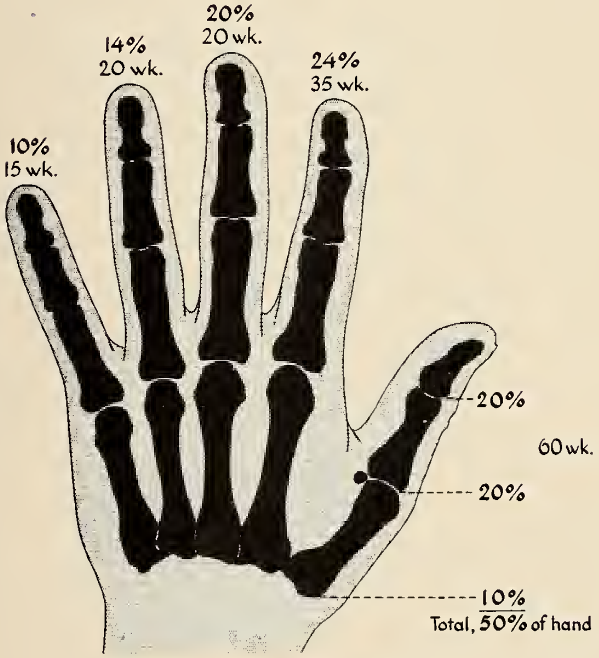

50%
65%
60%
Little finger
15 wk.
10% of hand
50%
65%
60%
Ring finger
20 wk.
14% of hand
50%
65%
60%
Middle finger
30 wk.
20% of hand
50%
65%
60%
Index finger
35 wk.
24% of hand
50% of thumb
20% of hand
50% of thumb
20% of hand

Industrial value of fingers

Industrial value of thumb
(not including metacarpal)
60 wk.
40% of hand

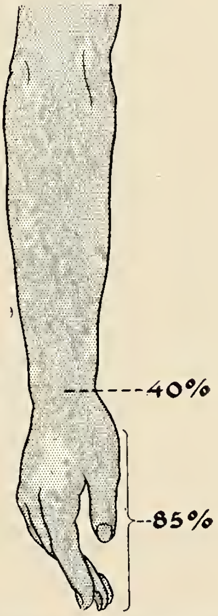
Formula: $\frac{50\%}{1} + \frac{65\%}{2} + \frac{60\%}{3} = 102.5\%$

Fig. 1.


10%
15 wk.
14%
20 wk.
20%
20 wk.
24%
35 wk.
20%
60 wk.
20%
10%
Total, 50% of hand

Industrial value of hand
150 wk.
30% of "permanent total"

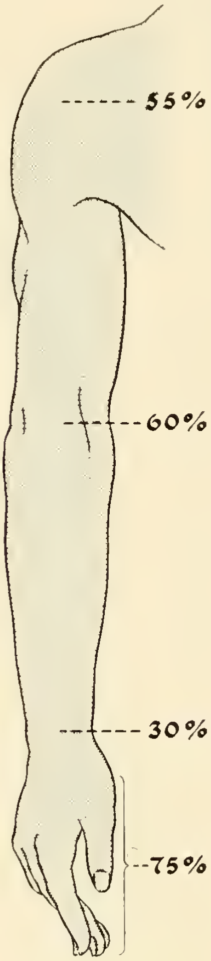
Fig. 2.



Industrial value of forearm
("hand and wrist")
175 wk.
35% of "permanent total"

Fig. 3.

Figure 1, illustrating the index finger, reveals that the distal phalanx has a value of 50 per cent of the finger; the mid-phalanx a value of 65 per cent of the finger, and the proximal phalanx a value of 60 per cent of the finger.



Industrial value of upper extremity
("arm")
200 wk.
40% of "permanent total"

Fig. 4.

The law specifies that the loss of or the loss of the use of a distal phalanx has a value of 50 per cent of the finger. The motion required in the middle and proximal joints to make the finger useful, can justifiably be given more value than the distal joints and, therefore, the value of 65 and 60 to the middle and proximal joints, respectively, can certainly be awarded for these.

These values would be awarded if each of these joints were involved alone, with rigidity. However, if more than one joint were involved with rigidity, their total value would exceed 100 per cent far in advance of complete uselessness. This is indicated in the following equation:

$$50\% + 65\% + 60\% = 175\%$$

It therefore becomes necessary to decrease the value of each additional joint, whenever more than the distal joint is involved, so that the final equation will not greatly exceed 100 per cent, when each of these three joints is completely rigid.

This equation must take into consideration the stipulation of the industrial law which specifies that the loss of use of the distal phalanx is equivalent to 50 per cent loss of the finger. The value of the distal joint accordingly cannot be diminished and, therefore, in the equation, its divisor is designated as 1.

The formula can be expressed as follows:

$$\frac{\%\text{ loss of distal phalanx} \times \text{value of distal phalanx}}{1} + \frac{\%\text{ loss of mid phalanx} \times \text{value of mid-phalanx}}{2} + \frac{\%\text{ loss of proximal phalanx} \times \%\text{ value of proximal phalanx}}{3}$$
$$= \text{disability of the finger.}$$

If the numerical values for each of the joints of the finger, as illustrated in Figure 1, are substituted in this formula, it reveals the following:

$$\frac{50}{1} + \frac{65}{2} + \frac{60}{3} = 102.5$$

The 2.5 per cent excess makes it possible for the fingers to be 100 per cent disabled and still retain 3 or 4 degrees of motion in each of its joints. This seems not unreasonable for such a finger would still be industrially useless, even though attached to the hand.

If we were to assume 50 per cent of the lost motion in each of the joints of the finger, the following formula and percentage disability would be obtained:

$$\frac{50\%\text{ of }50\%}{1} + \frac{50\%\text{ of }65\%}{2} + \frac{50\%\text{ of }60\%}{3} = 51\%$$
(disability to the finger)

Figure 1 also reveals the middle, ring, and little finger with identical value for each joint as has been described for the index finger. Calculations of disability in these fingers is figured in the same manner.

The legal weekly indemnity for each of the fingers is illustrated to be: 60 weeks for the thumb, 35 weeks for the index, 30 weeks for the middle, 20 weeks for the ring, and 15 weeks for the little finger. The hand has a specified legal value of 150 weeks. From these figures the relative values of the fingers and thumb, in relation to the hand, can be calculated. These calculations reveal the following:

Thumb $\frac{60}{150} = 40\%$

Index $\frac{35}{150} = 24\%$

Middle $\frac{30}{150} = 20\%$

Ring $\frac{20}{150} = 14\%$

Little $\frac{15}{150} = 10\%$

Total 108%

The law specifies that the sum of the disabilities in the fingers and thumb cannot be awarded in excess of that which is awarded for a hand. The additional 8 per cent over 100 per cent, as indicated in the total for all the fingers, suggests then, that the fingers need not be completely disabled in order that an award of 150 weeks be given.

The drawing (Fig. 2) illustrates that the thumb and fingers and their respective metacarpals constitute the entire hand.

The apponens actions of the thenar portion of the hand enclosing the metacarpal of the thumb, contributes additional value to the hand not included in that which is manifest by the thumb alone, as illustrated in Figure 1, where the thumb had a value of 40 per cent of the hand.

The thenar portion of the thumb adds 10 per cent to this, making a total of 50 per cent value of the hand for the thumb and its metacarpal.

The metacarpals of the fingers possess no independent value to the hand other than of supporting the fingers which in turn transmit their combined function into a hand. Whatever value the hand may possess, as far as the fingers and metacarpals are concerned, is manifest through the action of the fingers. It therefore seems reasonable, when making a calculation of disability in the hand, to base it upon the function in the fingers and thumb.

Therefore, in order to determine the disability in a hand, the disability in each finger is first calculated as described in the precding paragraphs. This disability is then multiplied by the relative value of each finger in relation to the hand.

The disability contributed by the thumb and its metacarpal is obtained by calculating the percentage of lost motion in each of the joints of the thumb and its metacarpal. These values are multiplied by the relative values of each of these joints and the product is the factor which contributes to the disability of the hand.

If an example can be used assuming 50 per cent disability in each of the fingers and thumb, the following equations will reveal the disability to the hand:

	Disability		Value to Hand		Disability Contributed to the Hand
Thumb-Distal joint	50%	×	20%	=	10%
Proximal joint	50%	×	20%	=	10%
Carpa-Metacarpal joint	50%	×	10%	=	5%
Index finger	50%	×	24%	=	12%
Middle finger	50%	×	20%	=	10%
Ring finger	50%	×	14%	=	7%
Little finger	50%	×	10%	=	5%
Total	50%	×	118%	=	59%

The excess of 18 per cent in the total values, constituting the hand, would allow approximately 10 degrees motion in each joint of the fingers and thumb and still retain 100 per cent industrial disability. A hand with only 10 degrees motion in each of its joints would not constitute an industrially usable hand.

It seems justifiable to be generous to that extent in calculating a disability. Furthermore, it seems legally warranted to be generous to that extent, for, wherein the law specifies a total weekly indemnity for the loss of all of the fingers and the thumb of 160 weeks, it specifies only 150 weeks for a hand. The law further specifies 175 weeks for a "hand and wrist." A complete analysis of all the fingers and the thumb including their metacarpals would constitute, for practical purposes, the loss of use of a hand and wrist. Therefore, 118 per cent disability of 150 weeks would be equivalent to 177 weeks, which is only one-half week in excess of the indemnity of a hand and wrist. This seems to indicate that the values which I have chosen are accurate enough.

Figure 3 discloses the industrial member of "hand and wrist." A hand and forearm not including the elbow joint is perhaps anatomically more correct.

It has already been stated that a hand receives 150 weeks of indemnity in accordance with the legal stipulation of the industrial law. A hand and wrist is stipulated as 175 weeks.

In order that the hand might continue to receive its full indemnity, whether as a hand alone or in "hand and wrist" disability, its relative value to a hand and wrist must be adjusted accordingly. Therefore, it is found that the hand, in this instance, must be given a value of 85.7 per cent of a hand and wrist (150/175 = 85.7%). Leaving off the fraction, 85 per cent is used as the whole number.

This would allow only 15 per cent for the wrist. The wrist when involved alone probably possesses more value than that, and therefore, the wrist value has been placed at 35% of the hand and wrist.

In adding these two values, it is again seen that the total exceeds 100 per cent by too great a margin (85% + 35% = 120%).

It therefore becomes necessary when multiple disabilities are involved to use a formula, wherein the hand unit is divided by one, and the wrist unit divided by two. This would leave the following equation:

$$\frac{85\%}{1} + \frac{35\%}{2} = 102.5\%$$

The excess of 2.5 per cent would be sufficient to allow a slight amount of motion in the hand and wrist and still constitute 100 per cent disability. In figuring a disability of a "hand and wrist" one first figures the disability in the hand as explained in a previous paragraph, then figures the disability of the wrist, and applies these figures to the formula as previously illustrated.

As an example, if we could again assume 50 per cent disability of the hand and 50 per cent disability of the wrist, we would obtain the following equation:

$$\frac{50\% \times 85\%}{1} + \frac{50\% \times 35\%}{2} = 51.2\%$$

It is here revealed that we have been generous to the extent of 1.2 per cent.

Figure 4 illustrates the industrial member of an arm (upper extremity). In this instance it will be noted that the hand and wrist receive different values than they received when evaluated on the basis of a "hand and wrist."

I shall again point out that a hand must receive an indemnity of 150 weeks, whether on the basis of a hand alone, on the basis of a "hand and wrist," or on the basis of an entire upper extremity. In that an entire upper extremity receives an indemnity value of 200 weeks, the relative value of the hand in this instance would be 75 per cent (150/200 = 75%). Likewise a "hand

and wrist" which receives an indemnity value of 175 weeks must continue to receive 175 weeks even though the disability must be based on the entire upper extremity (175/200 = 87.5%). Therefore, in this instance, the wrist value must then be placed at 26 per cent.

Applying these two figures to the formula reveals the following:

$$\frac{75\%}{1} + \frac{26\%}{2} = 88\%$$

This represents one-half of 1 per cent in excess of the legal relative value (88% × 200 weeks = 176 weeks). This represents one week in excess of the 175 weeks of specified indemnity. This seems to be accurate enough and is as accurate as can be obtained without using fractions.

Figure 4 illustrates that the elbow receives a value of 60 per cent and the shoulder a value of 55 per cent. Using the formula, to calculate the disability in the upper extremity wherein all the joints are involved, the following is obtained:

$$\frac{75}{1} + \frac{26}{2} + \frac{60}{3} + \frac{55}{4} = 121.7\%$$

The 21 per cent excess would allow approximately 15 degrees of motion in every joint of the upper extremity and still constitute 100 per cent. An upper extremity with no more motion than that would be industrially useless.

The above figures and description show my method of calculating disability in the upper extremity. Similar figures and similar methods have been used for the lower extremity. More details with regard to the origin of these figures and the method of arriving at this method of calculating disabilities will be explained in a subsequent publication.

Discussion

Dr. George Dunn: Doctor Rice has presented a very interesting paper. He has obviously given this matter a great deal of study.

In estimating permanent disability, one must remember that the estimate furnished by the doctor must harmonize with the existing laws of that particular state, otherwise the estimate becomes worthless.

Doctor Rice emphasized the importance in his general considerations of estimating disability largely on objective findings. This, in my opinion, is a very important consideration.

I enjoyed the paper very much and it will be very interesting after this paper has been published to study it carefully.

Dr. R. E. Hultkrans: I would like to make reference to two articles by Doctor Dunn about estimation of disabilities which appeared in Minnesota Medicine, and also one by Doctor Henry and Doctor Evans on "Interpretation of Disability in Minor Joints in Total Disabilities of the Extremities."

Doctor Rice has done an excellent job in calculating this so well. I think that any attempt to simplify this thing is extremely difficult, but I would like to call attention to the articles on estimation of disabilities previously published by members of this society, which will fall in line with what Doctor Rice has said tonight.

Dr. Earl C. Henrikson: I am not sure that I understood whether the subject of your paper is on the estimation of joint disability alone. Should the calculation of permanent disability be restricted to the estimation of joint action only? If the estimation is on the joints alone the question comes up as to the additional disability due to sensory disturbances as well as other changes. I do not think you mentioned anything in your paper other than joint disability.

Dr. Rice: I mentioned briefly only a few of the factors that had to be estimated. Loss of motion is the greatest factor in the cause of disability. I, therefore, dealt with only this one factor at this time. There are many other minor factors which contribute to a disability. These will be discussed later in a more detailed publication.

Many of those factors are pretty much of a guess. A certain number of them can be fairly well estimated and I think I have devised a method for some of them. If the radial nerve has been severed in the area above the elbow, all power of extension of the wrist and fingers have been lost, and the individual possesses no range of motion in the wrist or fingers. He would, therefore, retain 100 per cent disability of the hand and wrist. Other nerves transmit motor power to certain muscles, the loss of which would in turn produce loss of motion in the joints supplied by such muscles. These lost motions can be measured, and the disability thereby calculated.

Loss of sensation to an important tactile area such as the distal ends of the fingers constitutes from 10 to 15 per cent loss to the distal phalanx. If the distal phalanx has a value of 50 per cent of the finger, the loss to the finger would then be from 5 to 10 per cent of the finger.

Loss of sensation to skin over a small portion of the arm or forearm offers no industrial disability, and should therefore be worth no compensation award.

Loss of strength in co-ordination, instability, deformity, et cetera, has some value, but most of these are manifested by loss of the use of a member or a part of the member. I maintain that the useful range of motion should be used as a criterion. I do not ask an individual to force his range of motion. I merely encourage him to demonstrate his useful range of motion, using that as the criterion for my calculations. In so doing, I have taken into consideration most of the other factors such as weakness, pain, instability, inco-ordination, et cetera, and see no need to add additional values for these.

Dr. R. F. McGandy: I am very much interested in seeing this published. I would like to read it more carefully.

Do you compare one member with the other in arriving at a disability?

Dr. Rice: Yes, surely. All of the measurements are calculated against the opposite normal. In calculating specific disability, the opposite normal is used just as has been explained with the lantern slide illustrations.

Dr. McGandy: In the wrist you mentioned flexion and extension only and didn't take radial and ulnar deviation into consideration.

Dr. Rice: Ordinarily you need not. If the patient has lost all of a major motion, that is all you need take into consideration. Under such circumstances, minor motions would have no industrial value. To give them value when the major motion is completely lost would deprive the injured individual of disability due him.

If dorsi flexion, plantar flexion, ulnar deviation, and radial deviation were divided and each given equal values, their totals could not exceed 100 per cent. Then if each of these were found to have lost 50 per cent of their individual motions, the disability to the joint would still be 50 per cent. Most joints when developing a limitation of motion, develop it essentially equally in all of its various areas. It is, therefore, necessary only to calculate on the basis of one of the arcs of motion, i. e., dorsi-plantar flexion (the major arcs).

(Continued on Page 170)

Minnesota Academy of Medicine

Meeting of November 14, 1945

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 14, 1945. Dinner was served at 7 o'clock and the meeting was called to order by the President, Dr. A. G. Schulze, at 8:05.

There were forty-five members and six guests present. Minutes of the October meeting were read and approved.

Dr. Erling Hansen read the following Memorial to Dr. Horace Newhart, and a motion was carried that this be spread on the minutes of the Academy and a copy sent to Dr. Newhart's family.

HORACE NEWHART

1872-1945

Dr. Newhart was born in New Ulm, Minnesota, on December 9, 1872. His preliminary education was received there and at Carleton College at Northfield, Minnesota. His Bachelor's degree was received from Dartmouth, where his scholarship was won him the Phi Beta Kappa key. From Hanover, he went to the University of Michigan for his medical course.

After a short time in practice near Albany, where he married Anne Hendrick, he returned to Minnesota and settled in Minneapolis for general practice in 1901.

Later, he decided to specialize in diseases of the eye, ear, nose and throat and spent several years in Vienna under Neumann, Hayek, Rutin, Alexander, and others, who became his close personal friends. Dr. and Mrs. Newhart were in Europe at the outbreak of World War I, and have returned there several times for visits. Several of the Viennese faculty have from time to time been guests in their home in Minneapolis.

Dr. Newhart was on the faculty of the University of Minnesota Medical School since 1912, and for several years before his retirement from active teaching in 1941 was director of the Division of Otolaryngology. His chief interest was always in otology.

Since the early '20's, Dr. Newhart has been a champion in the field of prevention of deafness and conservation of hearing, together with the problems of those who have become hard of hearing. His almost fanatical zeal in this field will long be remembered by those who came in contact with him.

This zeal bore fruit in his home community and in many distant places in the establishment of routine hearing tests for school children, the improvement in audiometers for testing hearing, and the development of better hearing aids. For many years he was chairman of the committee of the American Academy of Ophthalmology and Otolaryngology which dealt with conservation of hearing. He was co-author of the manual which the Academy issued on hearing tests only a few days before his death. He served the Academy as its President in 1925. He was made an active member of the Minnesota Academy of Medicine in 1931.

In addition to the activities already mentioned, Dr. Newhart was a member of his local and state medical societies and the American Medical Association, the Minneapolis Society for the Hard of Hearing, which he organized and of which he was president from 1925 to 1929; the American Society for the Hard of Hearing, president 1927-1928; American Laryngological, Rhinological and Otological Society; the American Otological Society, president 1939-1940; American College of Surgeons; American Acoustical Society; The Minnesota Academy of Ophthalmology and Otolaryngology. He belonged to Sigma Chi and Phi Rho Sigma fraternities and to the Lafayette, Minikahda and Campus Clubs. His hospital connections were with University, Northwestern, Abbott and St. Barnabas hospitals in Minneapolis and Glen Lake Sanatorium.

Dr. Newhart died at Northwestern Hospital on July 9, 1945, after a short illness. Funeral services were conducted Thursday, July 12 at Lakewood Cemetery Chapel with Dr. Donald J. Cowling, president of Carleton College, conducting the services. He is survived by his wife, Anne Hendrick Newhart; a son, Ellwood H.; a sister, Grace, and two grandchildren, Anne and Sally.

The Executive Committee and members present approved Dr. Thomas Robert's request that his name be transferred from the Active to the Senior Membership list.

Upon ballot, the following men were elected to membership:

St. Paul.—Dr. Wallace Ritchie and Dr. Joseph Borg; *Minneapolis.*—Dr. L. R. Boies, Dr. E. F. Robb, and Dr. H. B. Hannah.

The scientific program followed.

SEROLOGY AND OBSTETRICS

RAE T. LA VAKE, M.D.

Minneapolis, Minnesota

Dr. La Vake's paper appears in this issue, page 130.

Discussion

Dr. Lee Barry, Saint Paul: Karl Landsteiner, in 1900 and 1901, grouped human blood into four groups. Because of the cumbersome methods of blood transfusion, blood grouping had more of an academic than a practical interest until after 1911. Landsteiner and Wiener, in 1940, found that 85 per cent of human individuals contained a factor in their blood which was called the Rh factor. Levine, in 1941, established the role of the Rh factor as the cause of erythroblastosis foetalis.

Dr. La Vake, in his paper, states that the A, B (basis of blood grouping) and Rh antigens are more than agglutinogens. They at times may act as toxins. This is especially true when the fetus possesses one or more of these toxins or antigens and the mother does not. He is of the opinion that a toxin-antitoxin reaction between the mother and child due to difference in blood factors is the cause of erythroblastosis foetalis, pre-eclamptic toxemia, eclampsia and premature separation of the placenta.

Dr. La Vake, closing: This paper merely purports to lay before you certain conclusions to be drawn from a concomitant study of serology and obstetrics. If these conclusions are true, they should give direction to our therapy of pregnancy toxemia. The question has presented itself, that if we assume that the lesions of pregnancy toxemia are due to a fetal toxin, which stimulates the production of an antitoxin in the mothers, an antitoxin that may injure or kill the fetus, may it not reasonably be assumed, that, as the lesions of toxemia pregnancy may be permanent and life shortening for the mother, so the lesions of the antitoxin may be permanent for the fetus, even though by blood transfusions we may ostensibly clear up the visible signs of the injuries and save the immediate life of the child. Experiments are now under way that may aid in settling this question. As you all know, snake venom is merely a concentrated saliva. Eighty per cent of humans are secretors, having the hereditary ability to secrete their antigens in the saliva. This is apparently a phylogenetic carry-over. This may explan the sinister appearance and actions of many human bites. If the toxin antitoxin relationship between fetus and mother accounts for pregnancy toxemia and erythroblastosis and allied fetal injury, it would suggest itself that, could a rattlesnake be attached to its host as a child is attached to its mother, the snake could be injured and killed *in situ* by the administration of appropriate antitoxin to the host. The attempt is being made to so injure young rattlesnakes by direct injection of antivenom, to see if permanent injury results if the attack is protracted over a long span of time and to the point of death under conditions analogous to those obtaining in severe cases of erythroblastosis. The results of this work will be reported to you later. It is important because though our responsibility is clear in attempting to cure erythroblastosis by transfusion after delivery, it is not clear that we are warranted in subjecting a woman to the increased risk of cesarean section if permanent and inhuman results are likely to obtain in the fetus, even though the immediate life of the fetus can be saved by transfusion.

PREGNANCY COMPLICATED BY IDIOPATHIC THROMBOCYTOPENIC PURPURA AND SARCOID DISEASE OF THE SPLEEN; SPLENECTOMY AND SUBSEQUENT NORMAL DELIVERY

Case Report

MARTIN NORDLAND, M.D., R. S. YLVISAKER, M.D. (by invitation), PAUL LARSON, M.D. (by invitation), and ROBERT REIFF, M.D. (by invitation)
Minneapolis, Minnesota

Dr. Martin Nordland, Minneapolis: The occurrence of purpurahemorrhagica in association with pregnancy may be a coincidence of two unrelated conditions. When it occurs, it is a serious matter. The majority of patients die and the infants seldom survive. In this case the spleen was removed after the pregnancy had progressed for five months and the patient later went through a full term normal delivery. This case report is presented because it was thought it might be of interest to this group and because of its rarity we wished to place the report on record.

Too much praise cannot be given to the internist in the management of this case. The preparation of the patient and the choice of the time of the operation are of paramount importance in the successful removal of the spleen, under these circumstances. In order that the report may be presented to you in an orderly fashion, I shall ask Dr. Ylvisaker to give you the history, together with his comment. Dr. Reiff will discuss the hematology, and Dr. Larson will present the problems concerned with the obstetrical delivery. After they have finished, I would like to discuss the problems related to the splenectomy as a therapeutic measure.

Dr. R. S. Ylvisaker, Minneapolis (by invitation): The case presented tonight is that of a twenty-six year-old white housewife, (N. P.) who was first admitted to Northwestern Hospital October 28, 1943, and discharged November 10, 1943.

Present Complaint: (1) Multiple petechiae and acchymoses; (2) profuse menstruation.

Present Illness: Her illness began about six weeks before admission when she first noted "red spots" over the lower extremities and abdomen. After three or four days, larger areas appeared over the ankles, followed by many such over the legs, hips and arms. Her menstruation two weeks prior to admission was very profuse and she felt faint if she tried to be on her feet. It was of normal duration. She struck her breast in a fall shortly before admission and a large ecchymotic area developed at the site of injury.

Family History: Both parents are living and well; divorced; there are no brothers or sisters and the family history is otherwise non-contributory.

Past History: She had a severe diphtheria at one year of age, complicated by an abscess which developed at the site of injection of antitoxin. There had been measles at the age of six or seven. A tuberculous chest lesion was said to have been found at the age of eight, for which she had been kept out of school for one year. She had been under observation at Lymanhurst Clinic, Minneapolis, from that time until 1942. The Clinic records revealed that an x-ray of the chest taken in 1926 at the age of nine, showed slight enlargement and calcification of the hilus glands in both lungs and clear lung fields. There was no Mantoux test done at that time, but in 1931, at the age of 13, the 1:1000 Mantoux was negative, the 1:100 was 1 plus positive. In 1942, 1-1000 Mantoux was again negative.

She had been hospitalized for two weeks at the age of ten for acute pyelitis with complete recovery. There had never been a recurrence. She had had jaundice for two or three weeks at the age of fourteen. There was no bleeding tendency then. She had been confined to bed, also at the age of fourteen, for a supposed heart disorder for a period of six months, but was later told there was no heart disorder. She was hospitalized December 28, 1941, with first and second degree burns and aborted shortly after this, with no excessive bleeding. No history could be obtained of any symptoms suggesting any allergic disorder and there had been no ingestion of drugs. She has one healthy child, three years of age.

Physical examination on admission was normal except for the presence of numerous petechial hemorrhages scattered over the lower extremities and a smaller number over the upper extremities and trunk, as well as several old and recent ecchymoses over the right breast, both hips, both legs and both arms. The spleen at first could not be palpated, but on the third day it was felt just below the costal margin. The blood pressure was 120/78.

Laboratory Findings: Blood: hemoglobin 13.2 grams, red cells 4,590,000, white blood cells 7,600; differential: p.m.n.'s 67 per cent, lymphos. 23 per cent, monos. 8 per cent, eos. 1 per cent, baso. 1 per cent. Bleeding time 2½minutes, clotting time 5 minutes 20 seconds. Platelet count 60,000 per c.mm. Prothrombin time 6'/4'35". Later platelet counts, 108,000 and 112,000. On the eleventh day the hemoglobin was 16.8 grams, white count 10,900.

The patient was given two transfusions of 500 c.c. each of citrated blood. This apparently completely controlled the purpura and a menstrual period during her hospital stay was normal except for slightly increased flow the first day.

She was readmitted to the hospital October 26, 1944, discharged November 8, 1944. She was now five months pregnant. She stated that she had been well until a few days previously when the purpura had recurred. Examination again revealed numerous petechiae and ecchymoses over the entire body, but most numerous in the lower extremities. The spleen was palpable. There was a bloody crust in the right nostril.

Laboratory Data: Hemoglobin 12.0 grams, red cell count 4,380,000; white count 10,400; platelets 110,000; later 140,000, 180,000, and 250,000. Bleeding time 2 minutes 25 seconds, clotting time 4 minutes 50 seconds. Clot retraction began in 4½ to 5 hours and was still incomplete in 24 hours.

She was given five transfusions of citrated blood during this admission with incomplete control of her purpura.

Her third admission to the hospital occurred on November 12, 1944, four days after her previous discharge. There had again been exacerbation of the purpura over the entire body, in the conjunctivae, and over the dorsum of the tongue. She had noted frankly bloody urine three days previously. The spleen was palpable. The fundus of the uterus was at the level of the umbilicus. The Mantoux test was negative with 1:1000 tuberculin.

Laboratory Data: Hemoglobin 13.5 grams, red cells 5,250,000, white count 11,800; p.m.n.'s 78 per cent, lymphos. 17 per cent, monos. 4 per cent, eos. 1 per cent. Bleeding time 40 minutes, clotting time 3 minutes 20 seconds. Ivy bleeding time 54 minutes; platelet counts ranged between 80,000 and 230,000. Cuff test was positive. Prothrombin time 20'/15'. Clot retraction was incomplete in 24 hours. Sternal puncture was done by Dr. R. Reiff and he reported a marked megakaryocytic hyperplasia. He stated that smear of the peripheral blood showed less than 25,000 platelets and they were distinctly abnormal in appearance.

She was given a total of seven transfusions of 250 to 500 c.c. of citrated blood with incomplete control of the purpura. It was, therefore, deemed unwise to allow her to go to term without more drastic measures to control her bleeding tendency. Moreover, it was felt that all the diagnostic criteria of a true, idiopathic thrombocytopenic purpura had been fulfilled. Splenectomy was therefore advised and was done November 21, 1944, by Dr. Martin Nordland. During the operation it was noted that bleeding stopped as soon as ligation of the pedicle was completed.

Pathological examination of the removed spleen revealed the presence of sarcoid disease. Postoperative convalescence was uneventful except for the devlopment of a partial atelectasis of the lower lobe of the left lung which cleared without further difficulty. X-rays of the lungs and the bones of the hands revealed no evidence of sarcoid disease and no skin lesions were observed at any time. She was discharged on the fourteenth postoperative day in good condition. No further purpura was noted.

Her last admission to the hospital occurred March 23, 1945, at which time she was delivered spontaneously of a normal infant without incident. The puerperium was normal.

Further details of the hematological and pathological aspects of this case will be discussed by Dr. Robert Reiff, obstetrical aspects by Dr. Paul Larson, and the surgical aspects by Dr. Martin Nordland.

I shall not burden you with any lengthy discourse on this disease, but it might be of value to review, briefly, the main landmarks in the development of our present concept of idiopathic thrombocytopenic purpura.

Werlhof first described essential purpura in 1775. This was an acute case in a ten-year-old child which recovered spontaneously.

Donne, 1842, was supposed to have originally described platelets (globulins).

Denys was the first to show a reduction of circulating platelets in Werlhof's purpura in 1887.

Hayem discovered poor clot retraction in 1896.

Wright, 1910, demonstrated that platelets arose from megakaryocytes in the bone marrow.

Duke, 1911, showed that clotting time was normal, but that bleeding time was increased.

Frank, 1915, first enunciated the theory that thrombocytopenia was due to a megakaryocyte maturation defect.

Kaznalson, 1916, theorized that there was an increased platelet destruction presumably in the spleen, and suggested the first splenectomy which was done for thrombocytopenic purpura.

Marrow biopsy was first introduced by Seyforth, 1923, and was simplified by Arinkin in 1929.

Limarzi and Schleicher, 1940, summarized our present concept of the role of the megakaryocyte in thrombocytopenic purpura and described the bone marrow picure.

Schwartz, 1945, showed the presence of high eosinophile counts in the marrow in allergic purpuras and low counts in essential thrombocytopenic purpura and commented on the prognostic significance.

As far as the association of purpura and pregnancy is concerned, apparently some type of purpura was first observed in pregnancy by Arand in 1765, but it was not until a century later that Barnes reported what is commonly considered the first case of true purpura in pregnancy. From that time on, scattered cases were reported until, in 1943, Burnett and Klass could find only sixty-eight cases in the literature. Forty of these they considered doubtful cases, eighteen symptomatic and only four true cases of thrombocytopenic purpura. They added one of their own.

Finn, 1944, found five other cases which he considered true thrombocytopenic purpura and added three cases from the New York Hospital records. He found only four cases in which splenectomy was done during pregnancy for the purpura: (1) case of Palowe, 1940; (2) case of Bernstein, Newman and Hitzig, 1939; (3) case of Phythyon and Lartz, 1943; and (4) case reported in a letter in the *Journal of the American Medical Association*, written by Grommen, referring to a splenectomy done by Garlock.

A uniformly high mortality rate in both mothers and infants when splenectomy is not done, is reported by all writers—usually 55 per cent to 60 per cent. Rushmore, 1925, reported that of forty-four mothers, twenty-six died, and of forty-two babies, twenty-seven died, seven of the fifteen infants showing evidence of purpura.

As far as we know, the case being reported tonight is the fifth case to be reported in which splenectomy has been undertaken during pregnancy. Undoubtedly there have been other cases which have not been reported. We have been informed of a case in which operation was performed at the Minneapolis General Hospital at about the same time as this case and in which the mother later was delivered normally of a normal infant.

Features of the disease during pregnancy probably do not differ from those in the nonpregnant state. However, Evans and Perry, 1943, reported a case in which striking improvement occurred during pregnancy with a rise in platelets to 770,000, and a normal bleeding time. In this case, there was a reappearance of symptoms and a fall in platelets after delivery. They commented on the difference in incidence of the disease in males and females and suggested an endocrine etiology of the disease. In all likelihood their patient was sensitive to some estrogenic substance.

The relationship of purpura hemorrhagica to sarcoid disease of the spleen is not certain. In the light of cases of purpura which have been reported, secondary to cirrhosis and other liver diseases, tuberculosis of the spleen and other infections, our case should probably be classified as secondary to the sarcoidosis of the spleen. The only other case of purpura hemorrhagica which we have been able to find reported as secondary to sarcoid disease of the spleen, was by Schwartz, 1945, who stated that sarcoid disease of the spleen was present in one of his thirty cases.

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* * *

ROBERT H. REIFF, Ph.D., University of Minnesota (by invitation): The day preceding splenectomy, the significant hematologic findings were as follows: peripheral blood smears were essentially negative except for a severe thrombocytopenia—platelets numbered less than 20,000 per cubic millimeter. Sternal puncture revealed a moderate neutrophilic hyperplasia and an enormous increase in both the relative and absolute number of megakaryocytes. These cells numbered 1,822 in the terminal 18 square millimeters of the smears (normal—approximately 56). Megakaryocyte morphology was normal except for the absence of granular zoning characteristic of platelet formation in the adult cells. Very few platelets were found in the marrow smears. The bleeding time was 50 minutes, clotting and prothrombin times were normal, the clot did not retract, and the cuff test was markedly positive. The spleen was palpable but not remarkably enlarged.

Six days postoperatively, the platelet count had risen to 484,000; it ranged between 440,000 and 500,000 during the next four days. Three months later, the count was 464,000.

The spleen weighed 275 grams. The capsule was smooth, and the follicles were visible on the cut surface. Microscopically, many of the Malpighian bodies were replaced by tubercles composed of epithelioid cells and containing giant cells of the Langhans type. The lesions differed from those of tuberculosis only in the absence of necrosis in the central portions. The pulp showed no changes. The pattern was interpreted as typical of Boeck's sacroid.

Platelet counts, even in the most experienced hands, are often inaccurate and should always be checked by a study of the stained smear as well as the retractility of the clot. Bone marrow biopsy serves a manifold purpose. First, it excludes many of the causes of symptomatic or secondary purpura such as aplastic anemia, aleukemic leukemia and other lympoblastomas, extensive carcinomatosis, lipoid storage diseases, and others. Second, it affords a method of obtaining a quantitative as well as qualitative estimate of the megakaryocytes.

As J. H. Wright demonstrated in 1906, it is through the fragmentation of the cytoplasm of the megakaryocytes that the blood platelets are formed. Limarzi and Schleicher first called attention to the marked increase in the number of megakaryocytes in the bone marrow in essential thrombocytopenic purpura. In the cases which we have had an opportunity to study, the megakaryocytes ranged from eleven to sixty times the normal number prior to splenectomy. In each of these cases, removal of the spleen was followed by a prompt rise in the number of circulating platelets and concomitant disappearance of abnormal bleeding. Since the oldest case in our series was operated less than four years ago, information regarding late recurrences is not available.

In two cases, bone marrow biopsy revealed, in one, a marked decrease and, in the other, a complete absence of megakaryocytes. The spleen was removed in both cases because of progressively profuse hemorrhage in the presence of conservative therapy. Both continued to bleed postoperatively with a fatal outcome.

The presence of a palpable spleen suggests a complication; in this case, sarcoidosis. The literature is in fair agreement that the spleen is not enlarged in uncomplicated essential thrombocytopenic purpura. It is interesting to note, in connection with the case under discussion, that tuberculosis of the spleen has been found in rare instances of thrombocytopenic purpura.

The occurrence of thrombocytopenia in some newborn infants of mothers with purpura (Wintrobe), the marked decrease of marrow platelets in the presence of abundant megakaryocytes, and the usual absence of splenic pathology would appear to support Frank's original hyopthesis that the mechanism responsible for the thrombocytopenia is to be found in a failure of the megakaryocytes to form platelets, rather than in splenic sequestration and destruction.

* * *

Dr. Paul Larson, Minneapolis (by invitation): The essential points in diagnosis, treatment, etc., of the blood disease have been well covered by the hematologist, internist and surgeon. I shall only outline the prospects of the mother and child as well as describe the uneventful outcome of a successful case, in which sarcoid also was present.

To date, thirteen cases constitute the total number of reported cases of thrombocytopenic purpura complicating pregnancy. Of these, only three have had splenectomies during pregnancy, while three others had the same operation before gestation. One other had her splenectomy the seventh day postpartum because of severe postpartum hemorrhage. This last case is the only death in the group and, curiously enough, the only one in which severe postpartum bleeding occurred. Undoubtedly more cases would come into this category as the statements of Bernstein, Newman, Hitzig, Phythyon, Lartz, and Grossman bear out, but no reports are found.

Because of the rarity of this complication of pregnancy, little is known. There apparently exists no causal relationship between this type of purpura and pregnancy. It is a coincidental complication. It may occur at any parity, although those reported were all multipara except two. It may occur at any time during gestation. While it may be true that all cases of purpura will eventually die of hemorrhage, strangely enough, only one of the entire group reported developed a severe postpartum hemorrhage.

Outcome of the Baby.—Here a great variance of opinion exists, but from these reported cases in the literature the following points are evident:

1. Five infants died, one of which had proven thrombocytopenic purpura. The other four died of prematurity or atelectasis.
2. Seven normal children were born, and
3. One bled until the seventh day, then cleared.

It is evident that if complete remission of the process occurs after splenectomy, the newborn more likely will not be affected. It is believed that this purpura may be congenital but not necessarily inherited. It is difficult to draw any conclusions from such a small group of cases but it would appear that the newborn has a better chance if splenectomy has been done prior to the pregnancy or if the disease is in a chronic phase as pointed out in Finn's article.

Case Report.—Mrs. N. P., aged twenty-seven, grav. 3, para. 1, married five and one-half years. Her first pregnancy terminated at term uneventfully and resulted in the birth of a child in good health (1940) weighing 8 pounds 4 ounces. She had a miscarriage in 1941 at two months' gestation following a severe burn. In 1943 she developed petechiae in the arms and legs during which time she also developed a profuse menstrual period which was unusual for her. At this time a diagnosis of thrombocytopenic purpura had been made after adequate study. Her last menstrual period was June 6, 1944. There was a moderate amount of nausea the first trimester, with the pregnancy continued uneventfully until October 26, 1944, when she was admitted to Northwestern Hospital with a repeat episode of petechiae on the arms and legs. Several transfusions were given and she was discharged November 8, 1944. The patient returned again November 12, 1944, with a recurrence of the petechiae plus gross hematuria. After proper preparation, the patient had a splenectomy November 21, 1944, following which she recovered uneventfully. The pregnancy then continued without incident until labor was induced with castor oil and crude extract of ergot on March 24, 1945, at full term. Labor was five hours, normal, and no excessive bleeding followed. Delivery of a 7-pound female infant was spontaneous. The puerperium was normal.

The details of the blood studies during this time have been covered thoroughly by the internist.

Dr. Nordland: In the acute phases of purpura hemorrhagica, the natural tendency is toward improvement. This makes it difficult to evaluate any therapeutic measure, without due regard to the natural course of the disease, whether treatment is administered by conservative methods or by splenectomy. Because the course of purpura hemorrhagica is varied, caution must be exercised in becoming overenthusiastic for splenectomy. Evaluation of the effects of operation as compared with the course of the disease in unoperated cases must be made only after the lapse of many years. There can be no question that splenectomy is a very valuable procedure in suitably selected cases. As was noted in this case, many surgeons have described total cessation of bleeding as soon as the splenic pedicle was tied. Surgical mortality should not exceed 5 per cent. Of these, no doubt, some would have died even if splenectomy had not been done. Removal of the spleen should not be done during an acute phase. Transfusions are extremely valuable preceding splenectomy. Frequent small blood transfusions of 100 to 300 c.c. given at intervals of two to three days have been considered of most value.

The indications for splenectomy may be enumerated as follows:

1. If bleeding is severe and fails to subside after repeated transfusions, splenectomy should be seriously considered. If there is any suggestion of improvement, however, operation should be deferred. Splenectomy is safer in the quiescent stage. In the first episode of bleeding, especially in children, it is more probable that bleeding will subside spontaneously rather than become more severe.
2. Operation should be given greater consideration in females than in males because of the possibility of a serious episode at menstruation or during pregnancy, as well as because recurrences seem to be more common in females than in males (4 to 3).
3. In chronic or recurrent cases, in addition to the above considerations, splenectomy is advisable if growth or development or the social or economic status of the patient is seriously impaired by recurrences, even if the hemorrhage is only moderate in character.

Splenectomy is contra-indicated in:

1. Cases of doubtful diagnosis,
2. Cases of symptomatic or secondary purpura such as those associated with acute infections or caused by some drug.

The removal of the spleen is not considered a particularly difficult operation. It is well to note, however, that because of its high location in the abdomen, the approach is occasionally difficult. This is particularly true in a woman well advanced in pregnancy. Anatomically, it is well to remember that the blood supply of the spleen is very abundant. The splenic artery, next to the renal artery, is the largest vessel supplying any abdominal viscera and is all out of proportion to the organ itself. The splenic artery, coming from the celiac axis, divides itself into a series of branching networks, finally allowing blood to percolate through the interstices of reticulo-endothelial tissue. Therefore, the spleen should be thought of as an organ made up of blood vessels and a fracture of this organ should be considered as a tear in one of the most vascular tissues in the body.

Discussion

Dr. S. E. Sweitzer, Minneapolis: This case to me is interesting from the fact that this woman had sarcoid of the spleen. Sarcoid was first described by Boeck in 1889 as a cutaneous disease and later it was divided into several manifestations. Later, Schaumann called sarcoid lymphogranulomatosis maligna. It may involve the tonsils, bones, lungs, and nodes, and there are also skin manifestations.

Snapper and Pompeu in 1938 reported 13 cases. The lungs were involved in 8 cases, 5 had skeletal involvement, 5 had ocular involvement, the spleen was involved 7 times, 7 had cutaneous involvement, and 4 had liver involvement.

This patient, possibly on her symptoms, may have had primary sarcoid in the spleen; if so, she had a rare type of sarcoid. I do not remember seeing any individuals with sarcoid who had cutaneous hemorrhages.

The meeting adjourned.

J. A. Lepak, M.D., *Secretary.*

SEROLOGY AND OBSTETRICS

(Continued from Page 132)

An understanding of the toxin-antitoxin relationship suggests the proper direction of studied therapy in the toxemias of pregnancy, erythroblastosis fetalis and in delayed transfusion toxemia.

Rh similar blood should be used in transfusion to prevent possible disaster if the woman has been isoimmunized by pregnancy or transfusion and to prevent isoimmunization that may interfere with her future ability to bear viable children.

CALCULATION OF DISABILITY IN THE EXTREMITIES

(Continued from Page 164)

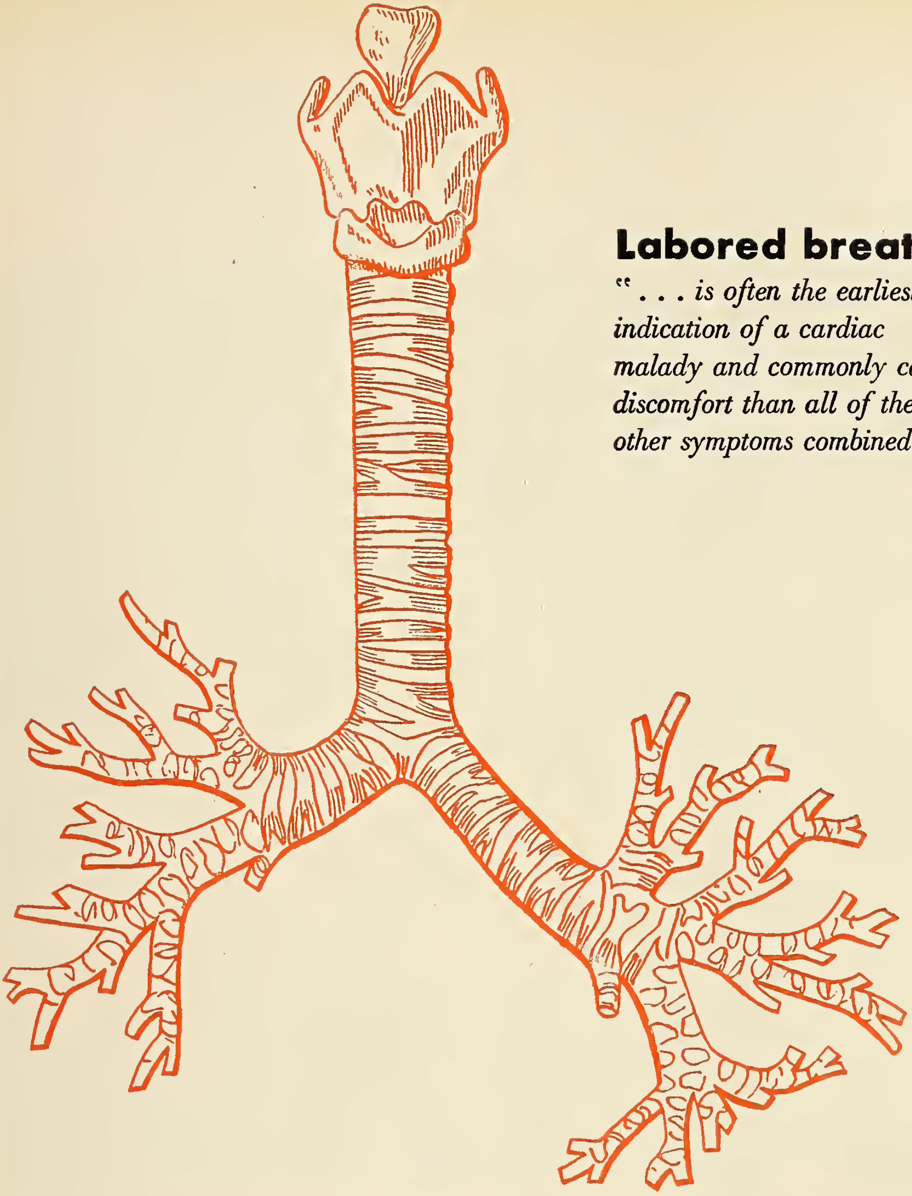
Dr. McGandy: How do you figure pronation and supination in estimating a disability on a wrist?

Dr. Rice: Pronation and supination of the forearm may come into disability estimation either in the elbow or in the wrist, depending upon from which it originates. If pronation and supination are completely lost, half of the wrist or elbow motion is lost. Dorsi-palmar flexion represents half of the motion in the wrist, and flexion-extension represents the other half of elbow motion.

Dr. McGandy: I noticed that in your method of estimating a shoulder disability, you only mentioned forward elevation and backward elevation, saying nothing about internal and external rotation or lateral elevation.

Dr. Rice: Ordinarily when one motion in the shoulder is lost, the other motions have a comparable loss. It would be extremely rare to retain all of forward-backward elevation, and lose only abduction-adduction. In normal activity, one does not use only one of the shoulder motions at a time. All three of the motions are being constantly and synchronously used.

Ernest R. Anderson, M.D.
Recorder



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Reports and Announcements

MEDICAL BROADCAST FOR FEBRUARY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

2—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
6—11:00 A.M.	KUOM	Your Nervous System Directs your Life
7— 5:15 P.M.	WCCO	He, Too, Is Ill
9—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
13—11:00 A.M.	KUOM	As We Grow Older We Can Be Well
14— 5:15 P.M.	WCCO	Give Him a Chance
16—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
20—11:00 A.M.	KUOM	We Inherit Some Traits But We Acquire Others
21— 5:15 P.M.	WCCO	The Job's the Thing
23—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
25— 4:45 P.M.	WCCO	Your Community Hospital
27—11:00 A.M.	KUOM	Stimulants and Narcotics Can Be Very Harmful
28— 5:15 P.M.	WCCO	Teeth and Personality

ANNUAL PRIZE CONTEST

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation announces that the annual prize contest will be conducted again this year.

For information address Dr. James R. Bloss, Secretary, 418 11th Street, Huntington 1, W. Va.

AMERICAN UROLOGICAL ASSOCIATION AWARD

The American Urological Association offers an annual award "not to exceed $500" for an essay (or essays) on the result of some specific clinical or laboratory research in Urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years. All interested should write the Secretary, for full particulars.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Netherland Plaza, Cincinnati, Ohio, July 22-25, 1946.

Essays must be in the hands of the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee, on or before July 1, 1946.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION AWARD CONTEST

The National Gastroenterological Association announces the establishment of an Annual Cash Prize Award of $100 and a Certificate of Merit for the best unpublished contribution on Gastroenterology or allied subjects. Certificates will also be awarded those physicians whose contributions are deemed worthy.

Contestants residing in the United States must be members of the American Medical Association. Those residing in foreign countries must be members of a similar organization in their own country. The winning contribution will be selected by a board of impartial judges and the award is to be made at the Annual Convention Banquet of the National Gastroenterological Association to be held at the Hotel Pennsylvania in New York City on Thursday evening, June 20, 1946.

All entries for the 1946 prize should be limited to 5,000 words, should be typewritten in English, prepared in manuscript form, submitted in five copies, accompanied by an entry letter, and must be received not later than May 1, 1946. Entries should be addressed to the National Gastroenterological Association, 1819 Broadway, New York 23, N. Y.

AMERICAN COLLEGE OF SURGEONS

The first of the series of ten sectional meetings sponsored by the American College of Surgeons was held at the Hotel Radisson in Minneapolis on January 28 and 29, with surgeons attending from Minnesota, Wisconsin, North and South Dakota, Iowa, Nebraska, Saskatchewan and Manitoba.

Lectures at the opening session were "Treatment of Infection by Chemotherapy and Antibiotics" and "Injuries to the Bile Ducts." During luncheon "Care of the Veteran" was the subject discussed, and dinner was followed by a forum on "Graduate Training in Surgery."

Dr. James M. Hayes, assistant professor of surgery at the University of Minnesota, who was in charge of arrangements, conducted a clinical conference at the January 29 session.

The meetings on both days opened at 8:30 A.M. with medical motion pictures.

MAYO PROFESSORSHIP IN PUBLIC HEALTH

The first permanently endowed professorship in the University of Minnesota was recently created as the Mayo Professorship in Public Health when the Board of Regents accepted endowment of that chair by the

(Continued on Page 174)

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(Continued from Page 172)

Mayo Properties Association. To pay the salary, which will not exceed $10,000, a gift of $150,000 was made to the University by the Mayo Properties Association, which specified that over and above the income from that sum the total will be made up from the income of the Mayo Foundation for Medical Education and Research.

The School of Public Health was created in the Medical School about two years ago when Dean Diehl recommended that the then department of preventive medicine and public health become a school within the medical school, like the school of nursing. Dr. Gaylord Anderson has been head of the school from the first, although during the war he has been on leave as head of the division of medical intelligence in the office of the surgeon general, war department.

The Mayo Properties Association is the organization formed by the late Drs. Charles H. and William J. Mayo and their associates, to hold and manage the assets of the Mayo Clinic. The Mayo Foundation for Medical Education and Research is an educational division of the University of Minnesota on the graduate level. It was first endowed with $2,000,000 in 1917, which sum was subsequently increased by $500,000 in 1934. It carries on a broad program of graduate teaching, maintains laboratories, and will now contribute to the new professorship.

The School of Public Health is one of six regional training centers in this country having as a principal function the training on the graduate level of doctors, engineers and nurses in public health matters to become specialists. For ten years past the school has had federal support of about $15,000 a year. Columbia, Harvard, Yale, Johns Hopkins, and Michigan are other institutions which have such schools.

Before the war there were from ten to fifteen doctors and from ten to fifteen engineers taking graduate work in public health. These programs were given up during the war but the public health nurses, numbering from 125 to 150, were carried through in the usual numbers. There is also a curriculum in public health education. Besides these programs the faculty gives instruction in personal and public health to undergraduates in many fields, including medicine, engineering, education, home economics, nursing and the like.

Minnesota was designated a regular public health training center after the state health officers of the north central group of states expressed a desire to have the federal government take that action.

FREEBORN COUNTY SOCIETY

The annual meeting of the Freeborn County Medical Society was held on January 18 at the Hotel Albert in Albert Lea. Dr. William L. Palmer, veteran Albert Lea physician, was guest of honor at the dinner which preceded the business meeting.

Dr. Leo L. Donovan, vice president during 1945, was elected successor to Dr. Brand A. Leopard, retiring president. Dr. J. Albert Schulz is the new vice president and Dr. Robert Swanson is treasurer. Dr. John Paul Person, of Alden, was re-elected secretary.

RED RIVER VALLEY SOCIETY

The annual dinner meeting and election of officers of the Red River Valley Medical Society was held at the Wayne Hotel in Crookston on December 27. Dr. Orlo K. Behr, of Crookston, is the new president, replacing Dr. John Cameron, of Erskine. Dr. William W. Johnstone, of Thief River Falls, was elected vice president, and Dr. Chester L. Oppegaard, of Crookston, was re-elected secretary-treasurer.

Dr. John F. Norman, of Crookston, addressed the meeting on "The Prepaid Medical Plan," and general discussion of the subject followed.

About twenty members and their wives attended.

WINONA COUNTY SOCIETY

Dr. John Tweedy was elected president of the Winona County Medical Society at the annual dinner meeting held at the Hotel Winona on January 7. Dr. Herbert Heise is the retiring president. Other officers chosen are: Dr. John S. Hamlon, St. Charles, vice president; Dr. Paul Heise, secretary and Dr. Leonard F. Johnston, treasurer.

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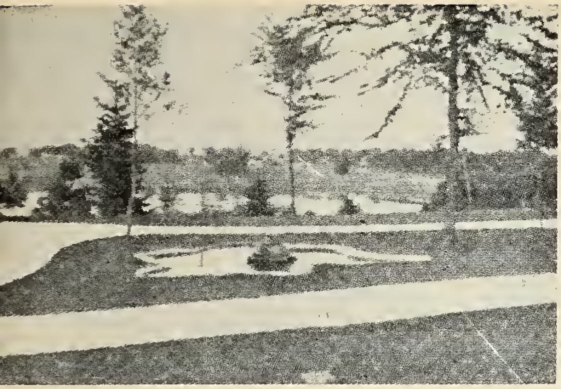

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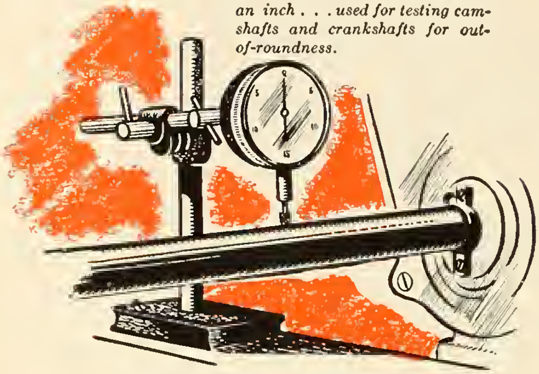

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. . . And nothing less than precision will meet the requirements of the competent physician.

For these requirements, Purified Solution of Liver, Smith-Dorsey, deserves your confidence.

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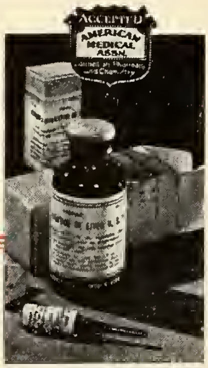

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MRS. EDWARD V. GOLTZ, *President*
Saint Paul, Minnesota
MRS. JOHN K. BUTLER, *Editor*
Carlton, Minnesota

BLUE EARTH COUNTY

The Blue Earth County Auxiliary members donated to the party given by the Y.W.C.A. at their Club house, December 12, for the Young Mothers' Club and their children. Food and toys were given the children.

EAST CENTRAL

Each Central members elected new officers for the year when they met at the Cambridge Epileptic Colony. Mrs. Gonley was hostess. The new officers are Mrs. E. W. Miller, Anoka; Mrs. R. G. Swenson, North Branch; and Mrs. G. H. Tesch, Elk River.

GOODHUE COUNTY

The Goodhue County Medical Society were hosts to the Auxiliary members at the St. James Hotel, Red Wing, December 10. While the doctors conducted the business meeting, the ladies had a social evening.

HENNEPIN COUNTY

Mesdames H. E. Drill and Frederick Erb were in charge of the Silver Tea at the Medical Arts Building, Minneapolis, December 7. This tea is the annual philanthropic project for Sarahurst, the rehabilitation home for discharged tuberculosis patients. Carol Seagren inspired everyone with the Christmas spirit in the reading of a Christmas play, Julia Denecke, a flutist, added charm to the festive tea.

It's a thrilling record that the Hennepin County Auxiliary has achieved in the Bond booth. The E award has again been granted them; this time, when they had finished their work and exceeded the quota. Special tribute should be paid to the captain, Mrs. H. O. Altman, and to those members who gave unstintingly of their time and effort at the Medical Arts Building booth. Mrs. D. B. Mork points out that it is to their credit that they "stuck to their job and finished in a dignified fashion."

NICOLLET-LE SUEUR

A dinner meeting was followed by a business session at St. Peter on December 10.

RAMSEY COUNTY

One hundred fifty dollars was recently donated by the Ramsey County Auxiliary to the Red Cross Canteen conducted at the Union Depot in Saint Paul. Members continue to make cookies for the soldiers who pass through Saint Paul.

(Continued on Page 178)

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nervous and mental disorders, alcoholism and drug addiction
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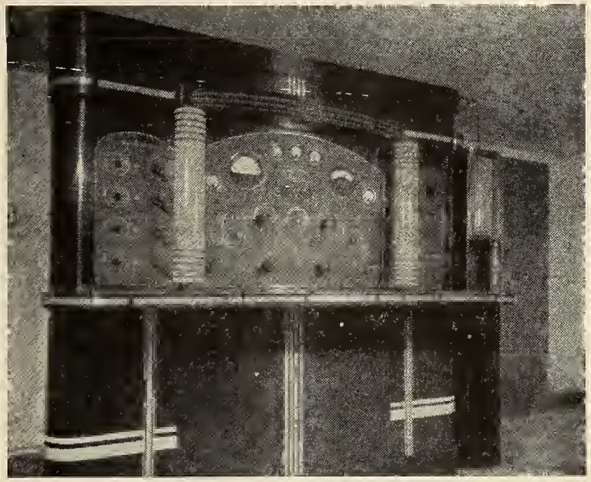

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Reg. U.S. Pat. Off.
For Abdomen, Back and Breasts

(Continued from Page 176)

RENVILLE COUNTY

It is the custom of the Renville Medical Society to share their distinguished speakers with the Auxiliary members. The doctors arrange the dinner, holding it usually at the county seat, Olivia, and invite their wives. When there is no program, each group conducts separate meetings.

ST. LOUIS COUNTY

The St. Louis County Medical Society Members entertained their wives, December 13, at the annual county dinner meeting held at the Northland Country Club. After dinner, Walter Ridder, columnist, talked on his experiences during the war in the Scandinavian countries.

STEARNS-BENTON

In previous years, Stearns-Benton Auxiliary has given $5.00 to any student from the two counties who was among the ten winners in the state anti-tuberculosis essay contest. This year, since there were no winners from either Stearns or Benton counties, they recognized instead three students who received honorable mention. To stimulate interest in succeeding years, as well as to reward these students for their accomplishment, each was given $2.50 by the Auxiliary. Bernard Schaefer, junior at St. Boniface High School, Cold Spring; Helen Miner, Technical High School, St. Cloud; and Joan Reidar, ninth grade student, at St. Cloud Cathedral were the recipients this year.

WABASHA COUNTY

Wabasha County Auxiliary, just six members and these six members have twenty-three children! Yet they meet regularly and carry on informal discussions on weighty matters, such as *"Essentials for World Peace,"* their December subject. They place *Hygeia* subscriptions not only in the hospitals, offices and libraries, but also in the beauty parlors. They also make cancer dressings. On December 8, they met at the home of Mrs. A. G. Ashner at Wabasha.

WASHINGTON COUNTY

Mrs. J. W. Stuhr was hostess at Stillwater, December 9, for the group of which she is president. Christmas stories were read and gifts sent to two of their members who were sick.

Case finding among symptomatic patients cannot be expected to result in a majority of those patients being discovered at a minimal stage; and contact examination among associates of diagnosed patients, although yielding a high proportion of early cases, is limited in its scope, especially among urban residents. Mass roentgenography would appear to be needed if substantial reduction of cases which are advanced at the time of discovery is to be achieved.—Berwyn F. Mattison, M.D., *Amer. Jour. P. H.*, Nov., 1944.

In Memoriam

JOHN LeROY BURTON

Dr. J. L. Burton, the only physician at Buhl, Minnesota, was killed October 31, 1945, when his car went off the road.

Dr. Burton was born in Stewartville, Minnesota, February 5, 1904. He received his B.A. and M.B. degrees from the University of Minnesota in 1935 and his M.D. in 1936, interning at the Minneapolis General Hospital.

Dr. Burton acted as health officer and school physician at Buhl. He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations.

* * *

JOHN FRANCIS CURTIN

Dr. J. F. Curtin of Minneapolis was born at Lawrence, Massachusetts, October 17, 1889. He died December 25, 1945, at the age of fifty-six.

Dr. Curtin obtained a B.A. degree from Holy Cross in 1911, and an M.D. from Harvard in 1915. He interned at the Hartford Hospital and took postgraduate work at the Eye, Ear and Throat Hospital in New York City in 1919-20. During World War I he was instructor in ear, nose and throat surgery in the Army Medical School at Fort Oglethorpe, Georgia.

Dr. Curtin came to Minneapolis in April, 1920, and specialized in the treatment of ear, nose and throat diseases. He was a member of the Minneapolis Academy of Medicine, the Minnesota Academy of Ophthalmology and Otolaryngology, the American College of Surgeons, the Hennepin County Medical Society, the Minnesota State and American Medical Associations. At the time of his death he was chief of the medical staff of Abbott Hospital.

* * *

ERNEST WESLEY RIMER

Dr. E. W. Rimer died of coronary thrombosis on December 22, 1945, at his home in Breckenridge, Minnesota. Dr. Rimer was born at Grand Junction, Iowa, June 20, 1882.

At the age of eighteen he joined the regular army and as a Sergeant in the 15th U. S. Cavalry saw service in the Philippines under Captain John J. Pershing before the close of the insurrectionary period. He also had the distinction of being the first white teacher on the island of Mindanao.

In 1906 he graduated from Valparaiso University with a degree in pharmacy and a B.A. degree. Two years later he received the M.D. degree from Rush Medical College in Chicago.

Dr. Rimer began practice in Breckenridge in 1912 but joined the colors again June 20, 1917. After training at the Army Medical College in Washington, D. C., he went overseas to England as First Lieutenant and became a Captain in the British Medical Corps. He served in France as surgeon of the Fourth Scottish

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Division and is said to have been for a time the only American surgeon in the front line trenches. He took part in the battles of Ypres, Cambrai, the Somme, Paschendale Ridge and Kimmel Hill. On one occasion he suffered from gas and at another time was reported killed. He recovered from a severe shell wound and after the Armistice was sent to Glasgow, Scotland, where he remained for eight months on duty in the Brigade Hospital. In 1919 he received the rank of Major in the British Medical Corps, and upon his return held the rank of Major in the U. S. Army Medical Reserve Corps. He received his discharge from the army at Camp Dix in 1919.

Dr. Rimer was a member of the staff of St. Francis Hospital, division surgeon for the Great Northern and Northern Pacific hospitals and county health officer. He was a member of the Park Region District and County Medical Society, the Minnesota State and American Medical Associations. He was a member and trustee of the local Baptist Church, a member of the Masonic Order, the Knights of Pythias, the Independent Order of Odd Fellows and the Elks. Many years ago he held the office of mayor, but all his outside interests yielded to his devotion to his profession.

Dr. Rimer is survived by his widow, and a daughter, Mrs. M. V. Young of Seattle, Washington.

* * *

JOHN CHANDLER SESSIONS

Dr. J. C. Sessions of Minneapolis was born at Atchison, Kansas, September 21, 1879, and died October 19, 1945, at the age of sixty-six.

He graduated from Central High School in Minneapolis and obtained the degrees of B.A. and M.D. from the University of Illinois in 1902. His internship was served in Cook County Hospital, Chicago, and the Minneapolis General Hospital. He took postgraduate study at the University of Illinois in 1908, and again in 1914.

During World War I Dr. Sessions served with the rank of Lieutenant-Colonel as division surgeon of the LaFayette Division.

He was a former member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

He is survived by his widow, a son, Lieutenant John A. Sessions, and a daughter, Suzanne.

* * *

ARTHUR W. SHALEEN

Dr. A. W. Shaleen, a practitioner at Hallock, Minnesota, since 1903, died suddenly of a heart attack January 6, 1946, at his home.

Dr. Shaleen was born at Lindstrom, Minnesota, September 13, 1878. His father came to this country from Sweden in 1855 and served in the Sixth Minnesota Regiment in the Civil War, and for twelve years was a member of the State Legislature.

Dr. Shaleen attended Gustavus Adolphus Academy and College but left at the end of his junior year. He received his M.D. degree from the University of Minnesota Medical School in 1902, followed by an internship at the Swedish Hospital in Minneapolis. In 1910-11 he took postgraduate work in Vienna and Berlin and in 1918 served as Captain in the Medical Corps, being stationed at Atlanta, Georgia.

After World War I Dr. Shaleen resumed practice at Hallock, and it was due to his support that the Kittson War Veterans Memorial Hospital was established.

He was a member of the American College of Surgeons, a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations. He read and spoke Swedish, Norwegian, German, Italian, French, Spanish, Latin, and had considerable knowledge of Greek. He was an inveterate reader, and in his library were a number of volumes in French, Spanish and Italian. He donated 1,000 volumes to the public library at Hallock.

In 1930 Dr. Shaleen was a delegate from Minnesota to the Democratic National Convention in San Francisco. He was a Mason and a member of the Swedish Lutheran Church.

In December 16, 1937, Dr. Shaleen married Margaret Brighton Wallner who survives him.

* * *

FRANK DALE SMITH

Dr. F. D. Smith, since 1934 a practitioner at Rochester, Minnesota, died December 5, 1945, at the age of sixty-four.

Dr. Smith was born at Douglas, Minnesota, June 19, 1881. After attending Rochester High School, he graduated from the University of Minnesota Medical School in 1905.

He practiced twenty-four years at Kasson, Minnesota, and then moved to Rochester in 1934.

Dr. Smith married Pearl Olson of Oronoco June 12, 1912. His widow and two daughters, Dorothy E. Smith of Minneapolis and Mrs. Isabel J. Farnham of Rochester, and a granddaughter, Jane Page Farnham, survive him.

Dr. Smith was a member of the Presbyterian Church, a Mason, and a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

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Of General Interest

The Board of Commissioners, Nobles County, has appointed Dr. John D. Waller, of Wilmont, county health officer.

* * *

Dr. James C. Crabtree, Saint Paul, and Dr. Alfred Kapsner, Starbuck, have established a partnership for the practice of medicine in Princeton.

* * *

Dr. James E. Ponterio, formerly of Shakopee, who recently returned from the South Pacific, has opened offices for general practice in West Saint Paul.

* * *

Ramsey County Board of Commissioners has announced the appointment of Dr. James H. McClanahan, of White Bear, as county health physician.

* * *

Dr. William A. Owens has terminated his practice in Montevideo and is now located in Minneapolis, where he is resident physician at the Deaconess Hospital.

* * *

Captain Marsh O. Perkins has opened an office with Dr. E. A. Smisek at 963 West Seventh Street, Saint Paul, after four years spent in service in France, Germany and Austria.

* * *

Lt. Colonel Arthur M. Mulligan, of Brainerd, who has been in military service in Hawaii, has been discharged and is now engaged in postgraduate work in Omaha, Nebraska.

* * *

Dr. Harry Bowers, Red Wing, has had word that his son, Dr. Robert N. Bowers, is on terminal leave after forty months of military service and will return shortly to his practice in Red Wing.

* * *

Dr. Louis A. Buie, of the Mayo Clinic, was elected a member of the Judicial Council of the American Medical Association at the meeting of the House of Delegates held early in December in Chicago.

* * *

Dr. H. Brauer, formerly of Sisseton, South Dakota, has been appointed health officer of Browns Valley, succeeding the late Dr. Bret V. Bates, who had been in office twenty years at the time of his death.

* * *

Dr. Ernest Mariette, superintendent of Glen Lake Sanatorium since it was first opened, was the guest of honor at the recent banquet which was given by the staff in celebration of the institution's thirtieth anniversary.

* * *

After three and a half years in the army, Dr. David Kaplan has returned to his practice in Saint Paul with offices in the Lowry Medical Arts Building. As Captain Kaplan, he was overseas from August, 1942, until his recent discharge.

Dr. Charles A. Aldrich, of the Mayo Clinic, was elected president of the American Board of Pediatrics at the annual meeting in Atlantic City. Dr. Aldrich had been secretary-treasurer of the Board since 1933, but had resigned just prior to the meeting.

* * *

Dr. Floyd A. Thompson, has resumed practice with offices at 245 South Snelling, Saint Paul. He attained the rank of Major and served three years in the South Pacific, having been stationed the last fifteen months with the 148th General Hospital on Saipan.

* * *

Major Eugene Muller, Saint Paul, has been discharged from the Army medical corps after four and a half years of service, twenty-seven months of which were spent with the 6th Army Division in the South Pacific. He will open an office in North Saint Paul.

* * *

Major Cecil A. Warren, Saint Paul, has been discharged from the Army where he served with the 121st Station Hospital. He spent twenty-six months in England and five months in France and Belgium. He is reopening his office at 373 Lowry Medical Arts Building, Saint Paul.

* * *

The War Department has awarded a Silver Star Medal to Captain William M. McConahey, Jr., who is now a Fellow in physical medicine at the Mayo Foundation. According to the citation the award was earned by "courageous action over and above the call of duty" on June 22 in the vicinity of Portbail, France.

* * *

Dr. Herbert Schmidt has been discharged from military service and has returned to his post at the Mayo Clinic. Duty on New Guinea was followed by hospitalization at Fitzsimons General Hospital in Denver. When Dr. Schmidt was again ready for assignment he was made a member of the staff.

* * *

After four years in military service, Dr. Bernard Street has returned to Northfield and entered into partnership with Drs. Joseph Moses and Warren E. Wilson. Dr. Street, a graduate of the University of Minnesota School of Medicine, was a major in the Army Medical Corps at the time of his discharge.

* * *

Dr. Ward Akester, who, since his release from the Army Medical Corps about eighteen months ago, has been with the Adams Clinic at Hibbing, has joined the staff of the Fergus Falls Hospital as assistant physician. Before entering service, Dr. Akester was in general practice in Marshall.

* * *

The St. Louis County Medical Society has announced the return to practice from military service of the following members: Dr. Charles M. Bagley, Dr. Arnold O. Swenson and Dr. Lawrence R. Gowan, all of Duluth;

(Continued on Page 184)

SOLAREUM

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ause it is purposely made to do a real job in the modern physician's office, SOLAREUM eting was accepted by discriminating doctors, hospitals and health institutions as early as). But only real merit could have made SOLAREUM what it is today—the nationally known er sheeting for all dry examinations.

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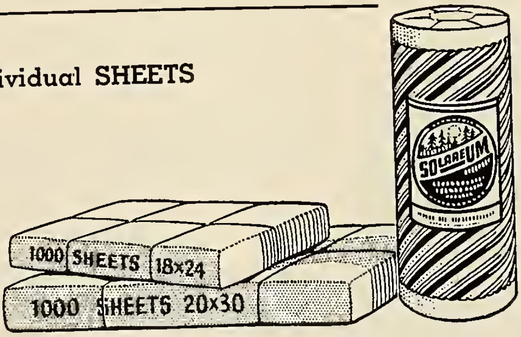
1000 SHEETS 18×24
1000 SHEETS 20×30
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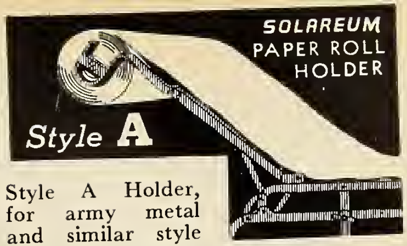
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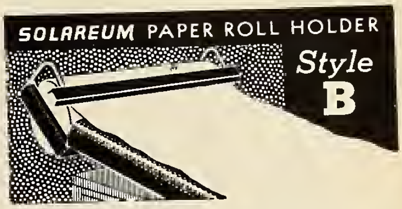
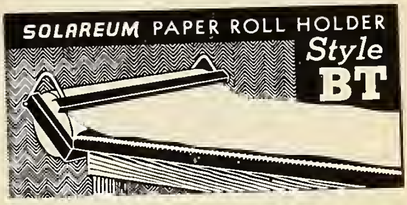
Style A Holder, for army metal and similar style tables without built-in headrest. For 18″ roll, $4.25. With sliding parts for adjusting to 20″ roll, $4.75. Nickel finish. Special finish, $3.50 additional.


SOLAREUM PAPER ROLL HOLDER
Style B

Style B Holder, for Wood or Steel Examining Tables, to hold 20″ roll, $4.75. For 24″ roll, $7.25. Finished in White or Walnut. Special finish, $3.50 extra.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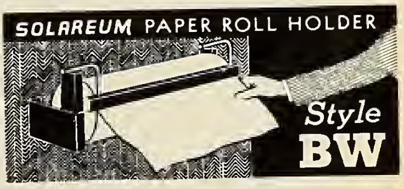
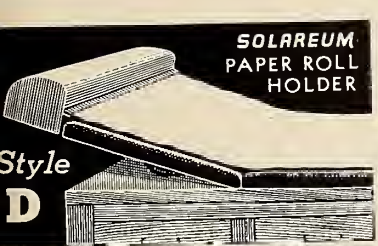
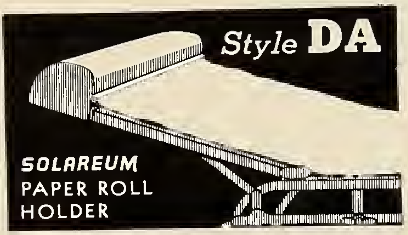
Style BT Holder, for wood or steel treatment tables. Takes 24″ roll of SOLAREUM. Finished in white or walnut color, $7.25. Special finish, $3.50 additional.


SOLAREUM PAPER ROLL HOLDER
Style BW

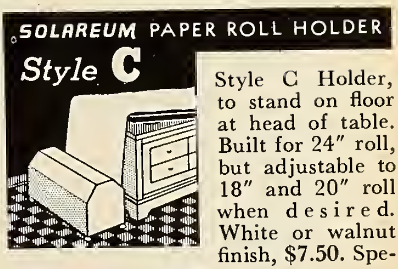
Style BW Holder, to fasten on wall instead of table, by 2 neat brackets. Secure and practical. for 20″ roll, $7.75. For 24″ roll, $7.90. White or walnut finish. Special finish, $3.50 extra.


SOLAREUM PAPER ROLL HOLDER
Style D

tyle D Holder, for wood, steel-line, eel-tone and similar tables, to take 8″ or 20″ roll. Walnut, Mahogany, lack, Ivory or White finish, $8.50. wo-tone finish, $1.50 extra. Other pecial finishes, $3.50 additional.


Style DA
SOLAREUM PAPER ROLL HOLDER

Style DA Holder, for army, metal, and all similar tables, without built-in headrest. Holds 18″ and 20″ roll. Walnut, Ivory or White enamel finish, $8.50. Special finish to match your table, $3.50 extra. State whether for 18″ or 20″ roll.


SOLAREUM PAPER ROLL HOLDER
Style C

Style C Holder, to stand on floor at head of table. Built for 24″ roll, but adjustable to 18″ and 20″ roll when desired. White or walnut finish, $7.50. Special finish costs $3.50 more.

All Prices are Subject to Change Without Notice

PHYSICIANS AND HOSPITALS SUPPLY CO., Inc.
MINNEAPOLIS MINNESOTA

(Continued from Page 182)

Dr. John D. Van Valkenburg, Floodwood, and Dr. Alvin Sach-Rowitz, Moose Lake.

* * *

Dr. Ernest R. Anderson was re-elected president of Asbury Hospital in Minneapolis at the annual staff meeting on January 3. Dr. Henry E. Hoffert was elected vice president and Dr. Harlan A. Alexander, secretary-treasurer. Drs. Chauncey A. McKinlay, Herbert M. N. Wynne, Thomas A. Peppard and Leonard K. Buzelle were appointed on the advisory board.

* * *

After three and a half years in the Navy, Dr. J. Allen Wilson has resumed the practice of internal medicine in Saint Paul. Dr. Wilson served eighteen months aboard an attack transport and took part in the invasions of Sicily, Salerno and Southern France. During his final year of overseas duty, he was senior medical officer with rank of captain.

* * *

Dr. Carl H. Coombs, discharged from the Navy in January, is again in practice at Cass Lake. During Dr. Coombs' absence, the care of the white population of the district was taken over by Dr. Zachariah E. House and Dr. Robert Campbell, both of whom had been looking forward to retirement for some time, but who instead carried on valiantly under a constantly increasing load.

* * *

Dr. E. J. Baldes, of the bio-physics section of the Mayo Cinic has been on a three months' trip in England, France and Germany for research in aviation medicine. Dr. Baldes traveled as a civilian for the Air Technical Command at Wright Field, Dayton, Ohio. On his return to this country the report of his findings was made directly to the office of the Air Surgeon in Washington, D. C.

* * *

Dr. B. A. Weis, Saint Paul, has been discharged from service in the Navy and has opened an office at 814 Lowry Medical Arts Building for the practice of internal medicine. Dr. Weis became a Commander in the Navy, was stationed eleven months at the Great Lakes Naval Hospital, spent two years in the Pacific, on land and sea, and spent the last four months at the Naval Hospital at Medford, Oregon.

* * *

Dr. Arden L. Abraham was made chief-of-staff of Miller Memorial Hospital, Duluth, at the annual meeting on January 4. Other officers elected at the same time are: Dr. Anthon J. Spang, vice chief of staff; Dr. Keith Fawcett, secretary-treasurer; and Drs. Herbert O. Hoff and Philip Eckman, executive committee. Dr. Mario Fisher was made executive committee member ex-officio.

* * *

Dr. Carl Krause, formerly of the Community Hospital in Fairmont, has returned to his home there, but will hereafter be associated with Drs. Herbert B. and Robert B. Bailey at the Bailey Hospital.

Dr. Krause has been in the armed forces since August, 1942. His first assignment was Fort Snelling, where

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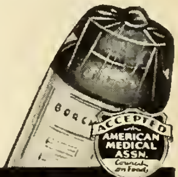

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e was in charge of obstetrics for the wives of service-nen for a year and a half. From there he was sent verseas and served with the 174th and 215th General Iospitals in England, France and Germany.

* * *

Dr. Olaf J. Hagen, who has been in practice at Ioorhead and Fargo since 1907, was guest of honor at testimonial dinner given by thirty-five friends and elatives at the Moorhead Country Club on January 15.

Dr. Hagen, now in his seventy-third year, is still active n the staff of St. Luke's Hospital in Moorhead. He s a former regent of the University of Minnesota and member of both the American and the International olleges of Surgeons, having been elected to the latter ody at their meeting in Mexico City in 1941.

* * *

Two Mayo Clinic physicians, Dr. John S. Lundy and r. Eward B. Tuohy, were elected to offices in the merican Society on Anesthesiology at the annual neeting in New York City in January. Elected presi-lent, Dr. Lundy took office immediately, while Dr. uohy was named president-elect for 1947.

Since 1946 is the one hundredth anniversary of the irst public demonstration of the use of ether by Wil-iam T. Morton in Boston, the year is expected to be f more than ordinary interest for the Society.

* * *

Dr. Robert Hollenhorst, of St. Cloud, has joined the Mayo Clinic, where he will be associated with the Department of Ophthalmology.

A graduate of the University of Minnesota School of Medicine, 1940, Dr. Hollenhorst served his internship at Abbott Hospital in Minneapolis and Ancker Hospital in Saint Paul. He was recently discharged from the Army with the rank of major after four and a half years in the Medical Battalion of the Sixth Infantry. Dr. Hollenhorst was on duty in New Guinea and the Philippines for more than two years.

* * *

Dr. Robert Wright, formerly of Jefferson, Wisconsin, is now with the Austin Clinic in Austin, where he is associated with Dr. David Anderson in the practice of general and gynecological surgery.

Dr. Wright was recently discharged from the air forces after two years in the Pacific Theatre, where he had served as a flight surgeon. He is a graduate of the Northwestern University School of Medicine, and following his internship spent a year in general surgery at the Ford Hospital in Detroit. He has also had special training in obstetrics and gynecology.

* * *

Dr. William O. Finkelnburg, recently discharged from the Army Medical Corps is now associated in practice with Dr. Irving W. Steiner in Winona.

Commissioned a first lieutenant in July, 1942, following the completion of his internship at Ancker Hospital, Saint Paul, Dr. Finkelnburg was sent to Hawaii, and later to the Solomons, New Caledonia and Okinawa. He was decorated with the Bronze Star for "meritorious service" in the Battle of Munda.

Dr. Finkelnburg is a native of Winona, where he

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resides with his parents, Mr. and Mrs. E. H. Finkelnburg.

* * *

Lt. Colonel Gerald H. Teasley, now a Fellow in urology at the Mayo Foundation, has been awarded the Legion of Merit for "performance of outstanding service." Formerly Director of the Military Personal Division, Office of Surgeon General, Washington, D. C., Dr. Teasley established a classification system for the Medical Department which was responsible for the best distribution of medical officers. He also prepared plans for demobilization to civilian occupations. According to the accompanying citation, Dr. Teasley's services "have been characterized by a high degree of proficiency surpassing that which might reasonably be expected of an officer in his position."

* * *

After an absence of five years in the Army Medical Corps, Dr. J. O. Meyer has returned to the Itasca Clinic at Grand Rapids.

A major in the General Headquarters Company, Seventh Division, Dr. Meyer participated in the initial landing on Attu and was on duty there and at Adack and Kiska until sent to Hawaii and assigned to the initial landings on Leyte. Dr. Meyer was at Okinawa from the assault until two weeks after V-J Day, when he was transferred to Korea.

While Dr. Meyer was away in service, Mrs. Meyer was employed at the University Hospital, where she was in charge of the Children's Clinic.

* * *

Dr. Charles Raadquist was made chief of staff of Hibbing General Hospital at the annual election of officers. Dr. Theodore A. Estrem was elected vice president and Dr. Arko, secretary. Department heads for the ensuing year are as follows: Dr. Clarence Jacobson, surgery; Dr. Carl N. Harris, medicine; Dr. L. William Morsman, opthalmology; Dr. Andrew Sinamark, otolaryngology; Dr. Edward W. Zeman, pediatrics; Dr. Theodore Estrem, obstetrics; Dr. A. Carlyle Tingdale, communicable diseases; Dr. Charles Raadquist, laboratory and x-ray. The resident physican is Dr. J. Cebula.

The annual banquet for the staff doctors is scheduled for the February meeting.

* * *

In an effort to remedy the sharp increase in communicable diseases reported by Dr. Frank J. Hill, city health commissioner, as a consequence of the housing situation in Minneapolis, Mayor Hubert H. Humphrey has organized a health advisory committee which includes the following from the medical profession: Dr. Charles E. Merkert, Hennepin County Medical Society; Dr. Frank J. Hill, city health commissioner; Dr. Donald W. Pollard, superintendent General Hospital; Dr. Edgar Huenekens, of the Board of Public Welfare; Dr. Gaylord Anderson, professor of public health, University of Minnesota.

In addition to assisting in the disposition of current problems, such as hospital expansion, construction of a new city hospital, modernization of General Hospital, policies of old-age assistance, care of convalescent and chronic cases, et cetera, the committee will function as a long-range planning board.

* * *

Absent from his offices in Canby for more than three years of service in the Navy, Dr. Leonard Monson returned to his practice shortly after the New Year. Later he will be joined by a partner, Dr. Raymond Chinn, with whom he worked in the South Pacific where they were attached to the same Marine Air Wing.

Dr. Chinn's home is in Washington, D. C., and he was in practice there when he was inducted into the Navy. Before moving to Canby, Dr. Chinn is taking some refresher courses.

Dr. Monson took part in the invasion of the Solomons with duty at Munda, New Georgia, Guadalcanal and Rendova. Returned to the States, he was assigned to recruiting service for a time, then was sent to Baltimore where he assisted in the commissioning of the *USS Typhoon*, a repair ship, and was aboard bound for Japan and nearing Hawaii when the war ended. Dr. Monson left the ship at Pearl Harbor and returned to this country. From then until discharged, he was at the Separation Center in Minneapolis.

* * *

Dr. Gordon L. Samuelson, who, prior to this entering military service had been practicing in Mankato for nine years, has re-opened his offices in the First National Bank Building.

Dr. Samuelson had been in service since September, 1940, when he enrolled in the Medical Field Service School at Carlisle, Pennsylvania. Following completion of his training, he was assigned to the adjutant general's office in Saint Paul and remained there until the National Guard was inducted into the regular army in January, 1941. He had twenty-six months of duty in the Aleutians and thirty-nine months overseas, with thirteen of them in the ETO in England, France, Belgium, Holland and Germany. He was a lieutenant colonel when discharged.

A graduate of the University of California, B.A., 1926, Dr. Samuelson received a B.S. from the University of Minnesota in 1929 and his medical degree in 1931. He has been a diplomate of the National Board of Medical Examiners since 1931.

During his terminal leave Dr. Samuelson took special work in urology at the University of Minnesota.

* * *

To meet the need of training more specialists in psychiatry and relocating medical men where psychiatrists are urgently needed, the National Committee for Mental Hygiene and the American Psychiatric Association have united to form a nationwide placement service. The service is designed especially to help physicians and psychiatrists make contact with training opportunities such as residencies, postgraduate courses and fellowships and to aid institutions in locating suitable candidates for appointment. Physicians interested in psychiatry are invited to send in full biographical statement including personal data, education, training, experience and special desires. Deans of medical schools, superintendents of hospitals and others employing or participating in the training of psychiatric personnel are invited to submit full information regarding available positions and sourses. Foundations, universities and other agencies are asked to report pertinent fellowships in psychiatry, psychosomatic medicine, and child guidance. Inquiries should be addressed to Captain Forrest M. Harrison (MC) USN, National Committee for Mental Hygiene, 1790 Broadway, New York City 19, N. Y.

* * *

The Hennepin County Medical Society has announced the return to practice of the following members:

Dr. Clarence Arlander, 2300 Central Avenue, a commander in the Navy, was in the South Pacific for twenty-two months. He served in Navy hospitals in New Caledonia and the Russell Islands and was attached to the staff of Vice Admiral Aubrey Fitch for nine months.

Dr. Donald B. Frane, 1214 Forty-second Avenue North, a captain in the Army, was overseas for twenty-three months. He was with a signal construction battalion on the Ledo-Stillwell Road for seventeen months.

Dr. Erling T. Hauge, obstetrician, Medical Arts Building, a colonel in the Army Air Force, was on duty in the South Pacific for thirty-three months.

Dr. John A. Haugen, obstetrician, Medical Arts Building, a lieutenant commander in the Navy, was with the Marine Division in the South Pacific for twenty-six months.

Dr. Donald McKinnon has resumed his surgery practice in his offices in the Medical Arts Building. A commander in the Navy, he served twenty months in the South Pacific and at Sebo Naval Base, Japan. For outstanding service at Iwo Jima and Saipan he was awarded the Bronze Medal.

Dr. Alexander J. Ross, 2723 East Thirty-eighth Street, a captain in the Army, was in New Guinea for eleven months.

Dr. Donald S. Simonson, general practice, 4151 Lyndale Avenue South, served as a major in the Army in England and Fort Logan, Colorado.

Dr. James E. Trow, 5748 Nicollet Avenue, an Army captain, entered service in October, 1944. Following duty in Alaska and on the Alcan Highway, he was assigned to Ashford General Hospital, White Sulphur Springs, West Virginia.

Dr. Wilford F. Widen, 2929 Bloomington Avenue, a commander in the Navy, had nineteen months of duty in the Admiralty and Philippine Islands.

Dr. Robert L. Wilder, 1801 Lyndale Avenue South, pediatrician, served as a major in the Army. He was on duty in England and Fort Logan, Colorado.

Dr. William Wolf, general practice, 1417 West Lake Street, has been engaged in Veterans Administration work.

* * *

HOSPITAL NEWS

The new county hospital at Mora, Kanabec County was formally opened on December 26, and by the first of the year seven patients were listed. New Year's Eve brought an emergency case, and the first hospital baby was born. The total cost when all equipment has been installed will be $100,000. Capacity is twenty-

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two beds. The medical staff includes Drs. Willard F. Nordman, Clarence S. Bossert, and Alvin A. Peterson, of Mora; Dr. William T. Nygren, of Braham; Dr. Carleton G. Kelsey, of Hinckley, and Dr. Richard A. Whitney, of Cambridge.

* * *

The annual meetings of both Loretto and Union Hospitals in New Ulm were held on January 10, and the following officers were elected:

Staff president at Loretto Hospital, Dr. Joseph H. Vogel; vice president, Dr. Otto B. Fesenmaier, and secretary, Dr. Otto J. Seifert.

Dr. Fesenmaier was elected staff president at Union Hospital; Dr. Vogel, vice president, and Dr. Hjalmar E. Mortonbak, secretary.

* * *

Dr. Walter S. Broker, manager of the Wadena-Todd Sanatorium since it was opened in 1937, has resigned, effective December 1, 1945, and is now managing the Pleasant View Sanatorium in East St. Louis, Illinois.

Following his graduation from the University of Minnesota School of Medicine and his internship at St. Mary's Hospital in Minneapolis, Dr. Broker was in private practice for two years. In 1922 he entered the tuberculosis field at the sanatorium at Battle Lake and remained there until going to Wadena.

* * *

Dr. John Van Valkenburg was one of the speakers at the first annual meeting of the Floodwood Hospital Association held on December 17 to formulate plans for a membership drive and nominate a board of trustees.

Dr. Peter Ward, administrator of the Charles T. Miller Hospital and the Amherst Wilder Dispensary in Saint Paul, was elected president of the American Hospital Association at the meeting of the House of Delegates in Chicago.

* * *

The American College of Surgeons has published a directory of approved locations for surgical training chiefly for the use of returned medical officers. Approved locations for graduate training in 240 civilian hospitals in the United States and Canada, in thirty-two Naval, seven Veterans Administration and ten United States Public Health Service hospitals are listed. Nine locations in Minnesota are included. A copy of the directory may be obtained from the American College of Surgeons, 40 E. Erie Street, Chicago, Illinois.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

IEN WITHOUT GUNS. By Dewitt MacKenzie. 152 pages, 137 illustrations. $5.00 Philadelphia: Blakiston, 1945.

This book contains a résumé of some medical aspects f World War II, together with a series of illustrations roduced by the artists from their experiences in comat. The text, while not attempting to give a compreensive account, gives some highlights of the work of he Medical Corps from the lay outlook. It rightly lays up the heroic record of the Medical Corpsmen. The text, however, merely offers a backdrop for the exellent portrayal of medical scenes by the artists. Many f these pictures have been seen in various publications rinted by the Abbott Laboratories. As a collection of rtistic and historical value this book is well worth while.

S. W. Shimonek, M.D.

OCTORS AT WAR. Edited by Morris Fishbein, M.D., with the following contributors:

eorge B. Darling, M.D., Vice Chairman of the Division of Medical Science, National Research Council;
arold S. Diehl, M.D., Member of the Directing Board, Procurement and Assignment Servce, and Dean of the School of Medicine, University of Minnesota;
ajor General David N. W. Grant. The Air Surgeon;
harles M. Griffith, M.D., Medical Director, Veterans' Administration;
ajor General Paul R. Hawley, Chief Surgeon, ETO;
ajor General Norman T. Kirk, The Surgeon General, United States Army;
ajor General F. Lull, Deputy Surgeon General;
ice Admiral Ross T. McIntire, The Surgeon General, United States Navy;
aptain French R. Moore, Medcal Corps, United States Navy;
homas Parran, M.D., The Surgeon General, United States Public Health Service;
rigadier General Fred W. Rankin, Chief Consulting Surgeon, United States Army;
. Canby Robinson, M.D., LL.D., SC.D., National Director of the Red Cross Blood Donor Service;
olonel Howard A. Rusk, Chief of the Convalescent Training Divison, Army Air Forces;
rigadier General James Stevens Simmons, M.D., PH.D., D.P.H., Sc.D. (Hon.), Chief of the Preventive Medicine Service, United States Army. Illus. Price $5.00. New York: E. P. Dutton & Company, 1945.

This book is a brief survey of certain of the aspects of medical service in the war. It is a series of personal accounts by men concerned with some phases of the medical service. Each contribution has a self-explanatory title. Written by many, it necessarily is incomplete, and the style varies, but it is a readable and accurate account of the work of many agencies. Later, no doubt, more exhaustive treatises will be written.

Gordon C. MacRae, M.D.

THE OSSEOUS SYSTEM. A Handbook of Roentgen Diagnosis. By Vincent W. Archer, M.D. 320 pages, 148 plates. Chicago: The Year Book Publishers, Inc., 1945.

This work is one of six Handbooks of Roentgen Diagnosis, written by different authors and discussing different aspects of roentgenology. In general, the author presents, briefly but very clearly and efficiently, the important abnormalities of bone tissue caused by trauma or disease.

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principal headings: (1) Technique: Principles of Interpretation: Roentgen Anatomy; (2) Injuries to the Skeletal System Other than the Spine; (3) The Spine; (4) Bone Diseases and Abnormalities in Childhood; (5) Bone Diseases Occurring Principally in Adult Life. Under these main headings are given brief descriptions of various types of injuries and disease. The verbal discussions of individual disorders are adequately presented and accompanied by excellent illustrations. The author is careful in listing many points which may serve to avoid pitfalls or errors in diagnosis. Accordingly much emphasis is placed on proper technique of roentgenography in order to obtain sufficient knowledge of the part which is under study.

Although the book is intended for the occasional radiographer, it is considered to be useful also to those more experienced in the technical and diagnostic aspects of roentgenography of the osseous system.

R. J. Dittrich, M.D.

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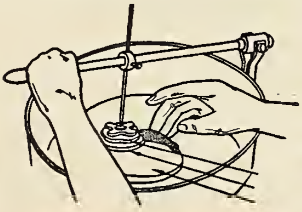

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---

*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1923

It is ironical that the practice of attempting to cure rickets by holding the child in the cleft of an ash tree was associated with the rising of the sun, the light of which we now know is in itself one of Nature's specifics.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 **March, 1946** **No. 3**

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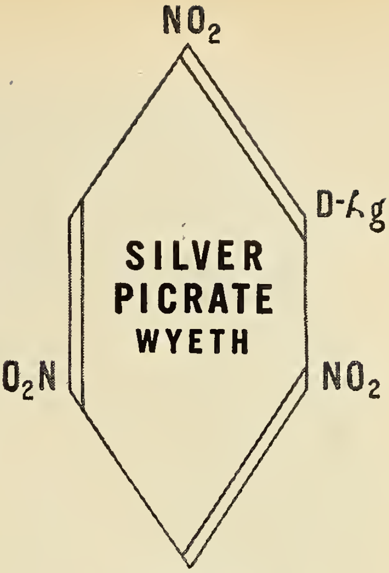
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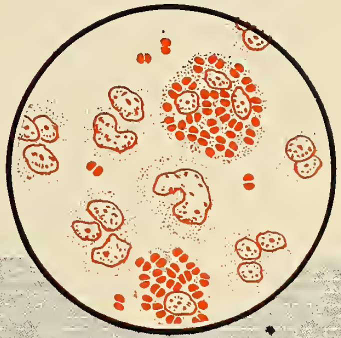

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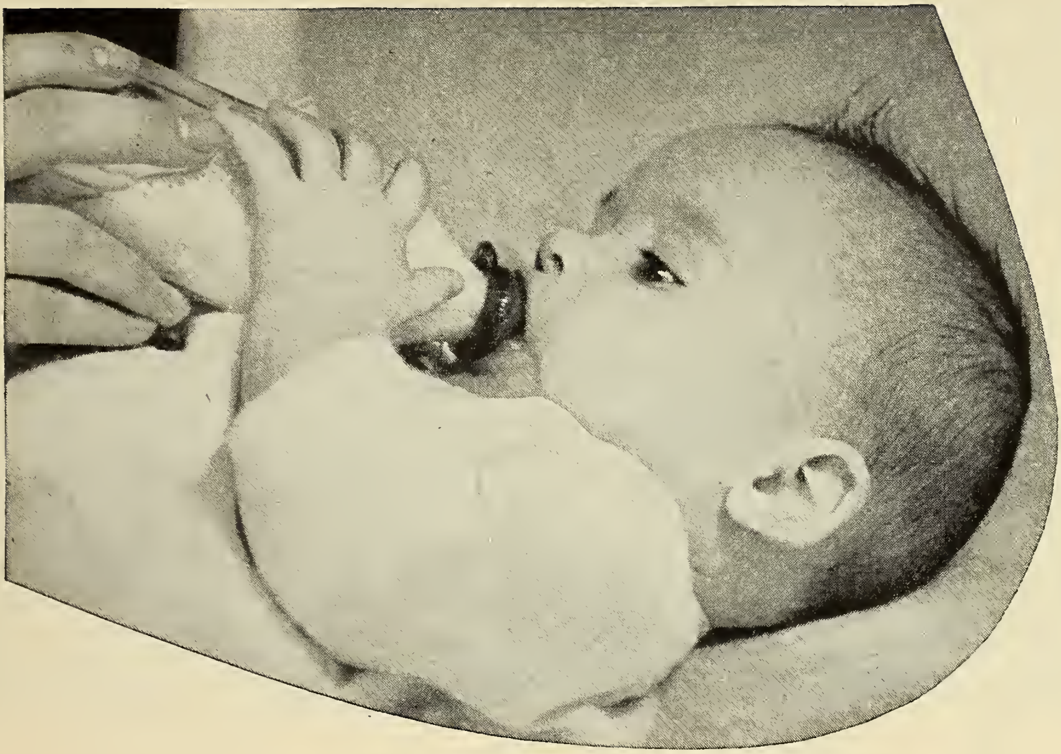

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*Davis, C. H.: Gonorrheal Arthritis Complicating Pregnancy Treated with Penicillin, Am. J. Obst. & Gynec. 50:215 (Aug.) 1945.

Hudson, G. S., and Rucker, M. P.: Gas Bacillus Infection of the Uterus Treated with Penicillin, Am. J. Obst. and Gynec. 50:452 (Oct.) 1945.

Woltz, J. H. E., and Zintel, H. A.: The Transmission of Penicillin to Amniotic Fluid and Fetal Blood in the Human, Am. J. Obst. & Gynec. 50:338 (Sept.) 1945.

Mitchell, R. McN., and Kaminester, S.: Penicillin; Case Report of a Patient Who Recovered from Puerperal Sepsis Hemolytic Streptococcic Septicemia, Am. J. Surg. 63:136 (Jan.) 1944.

White, R. A.: Puerperal Sepsis Treated with Penicillin, Southern M. J. 37:524 (Sept.) 1944.

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1. Dickinson, R. L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
2. Eastman, N. J., and Scott, A. B.: Human Fertility 9:33 (June) 1944.
3. Warner, M. P.: J. A. M. A. 115:279 (July 27) 1940.

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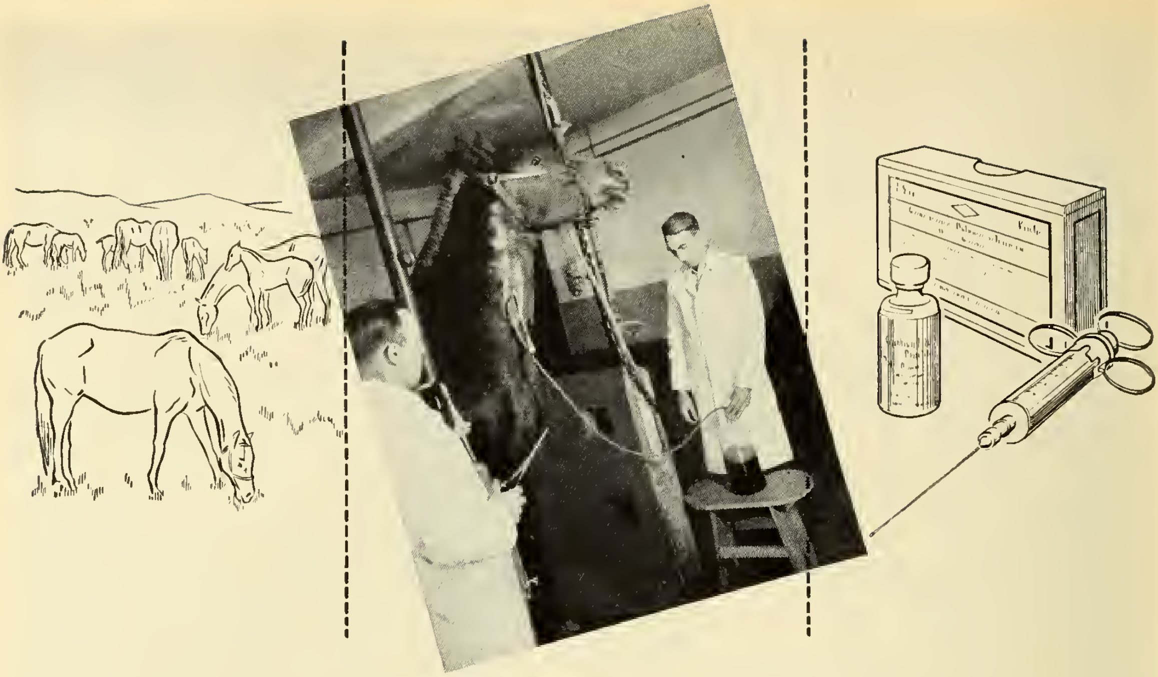

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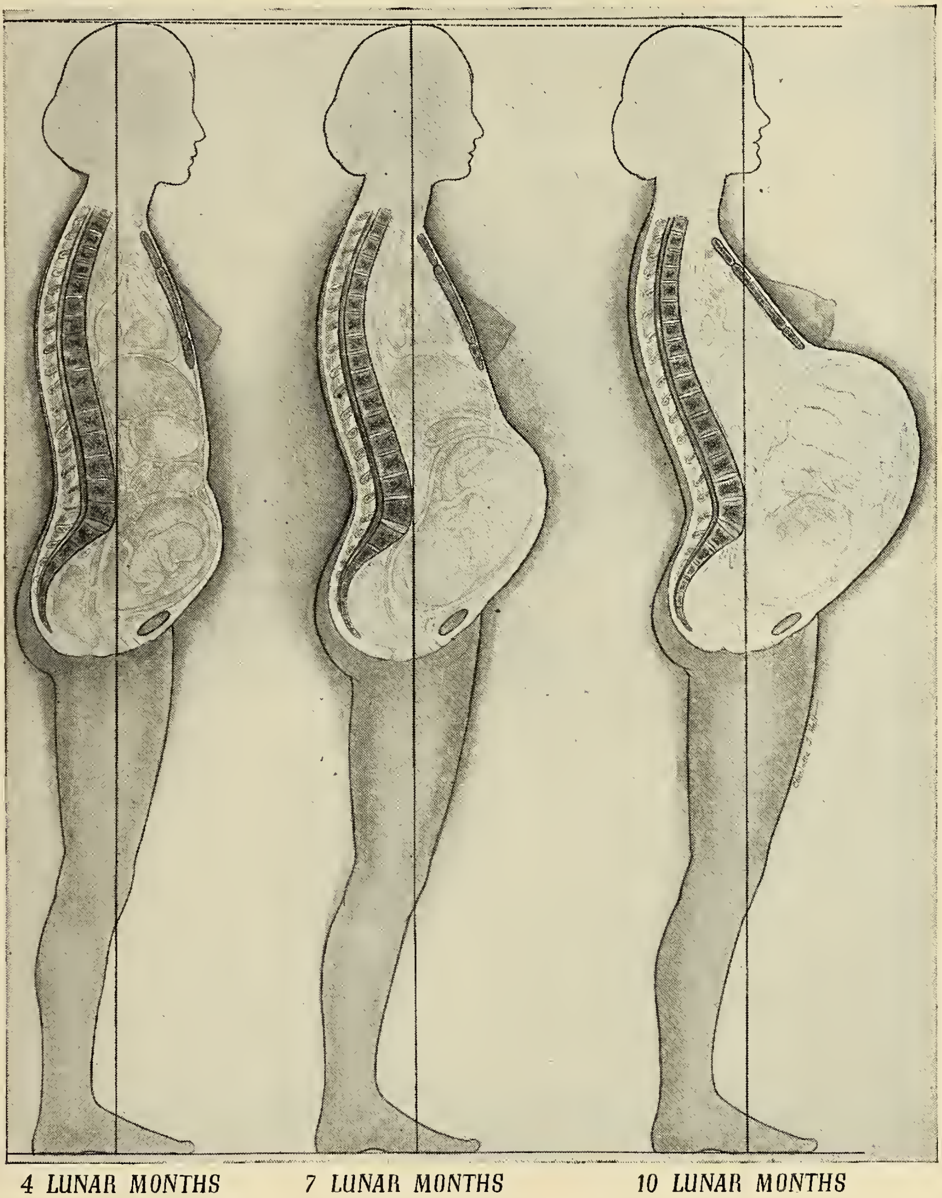

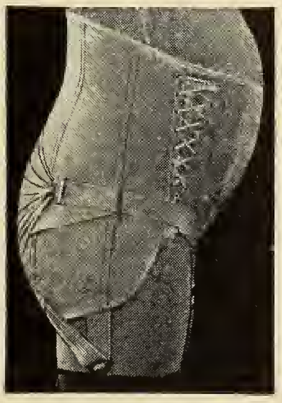

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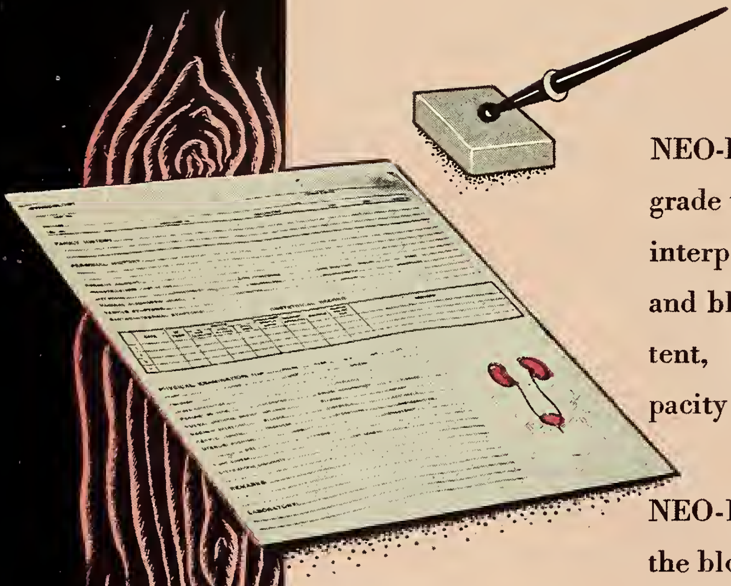

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*Anderson, Geo. K., M.D.: *The Importance of Protein in Diet Therapy,* J. Am. Dietet. A. 21:436 (July-August) 1945.

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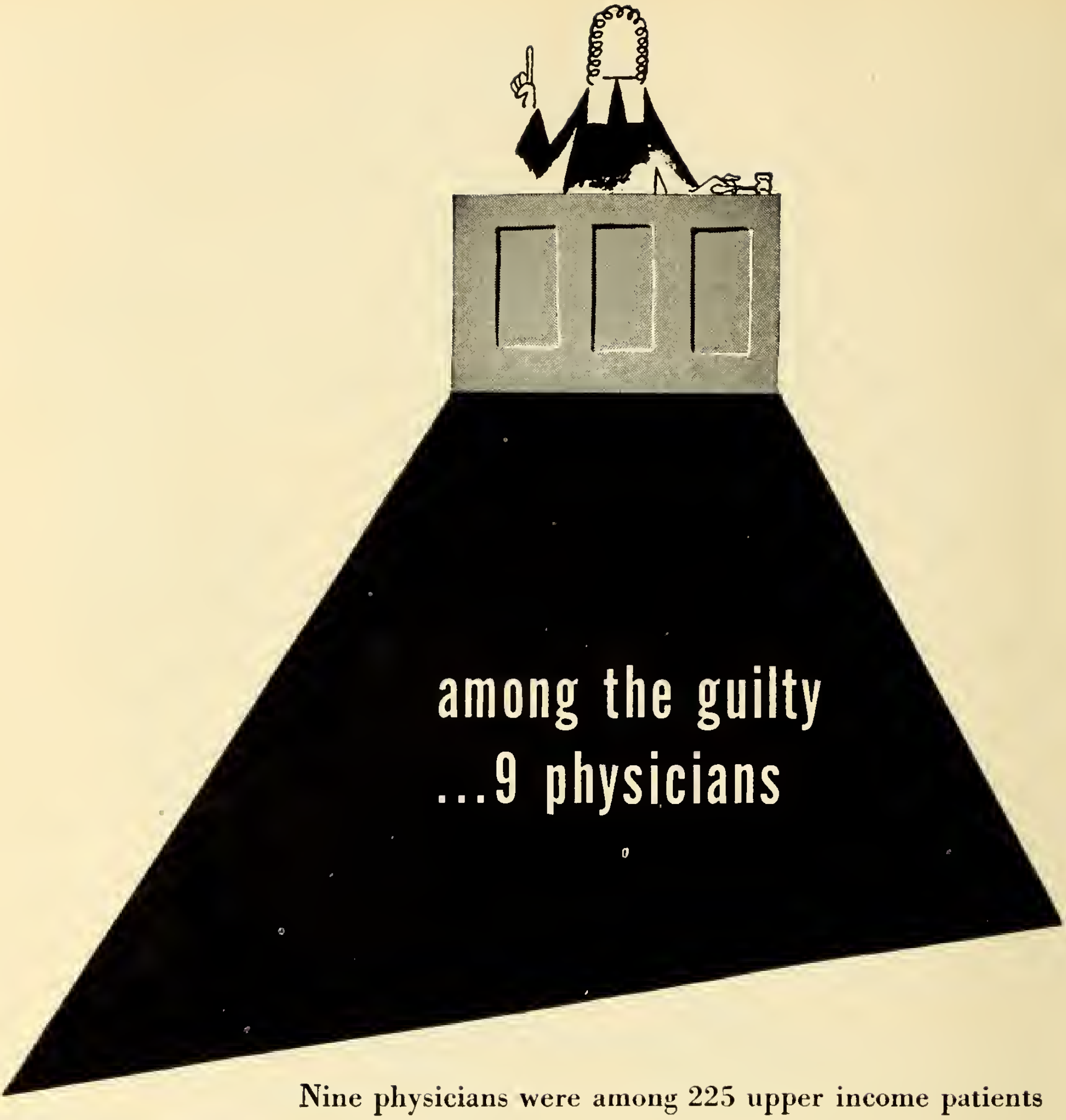

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1. New England J. Med. **228:**118 (Jan. 28) 1943.
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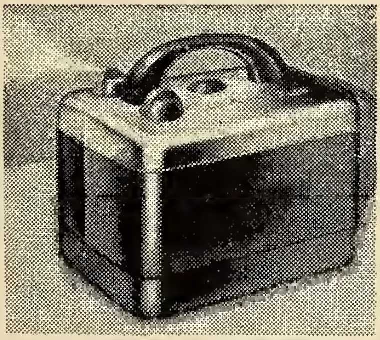

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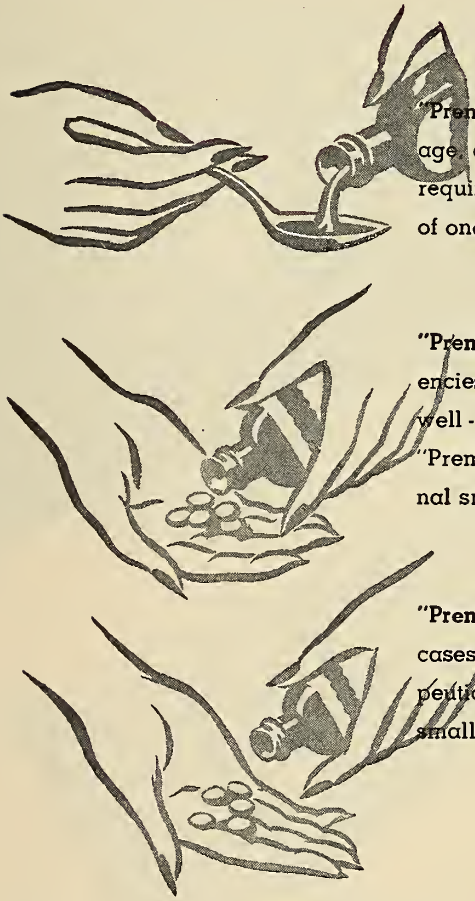

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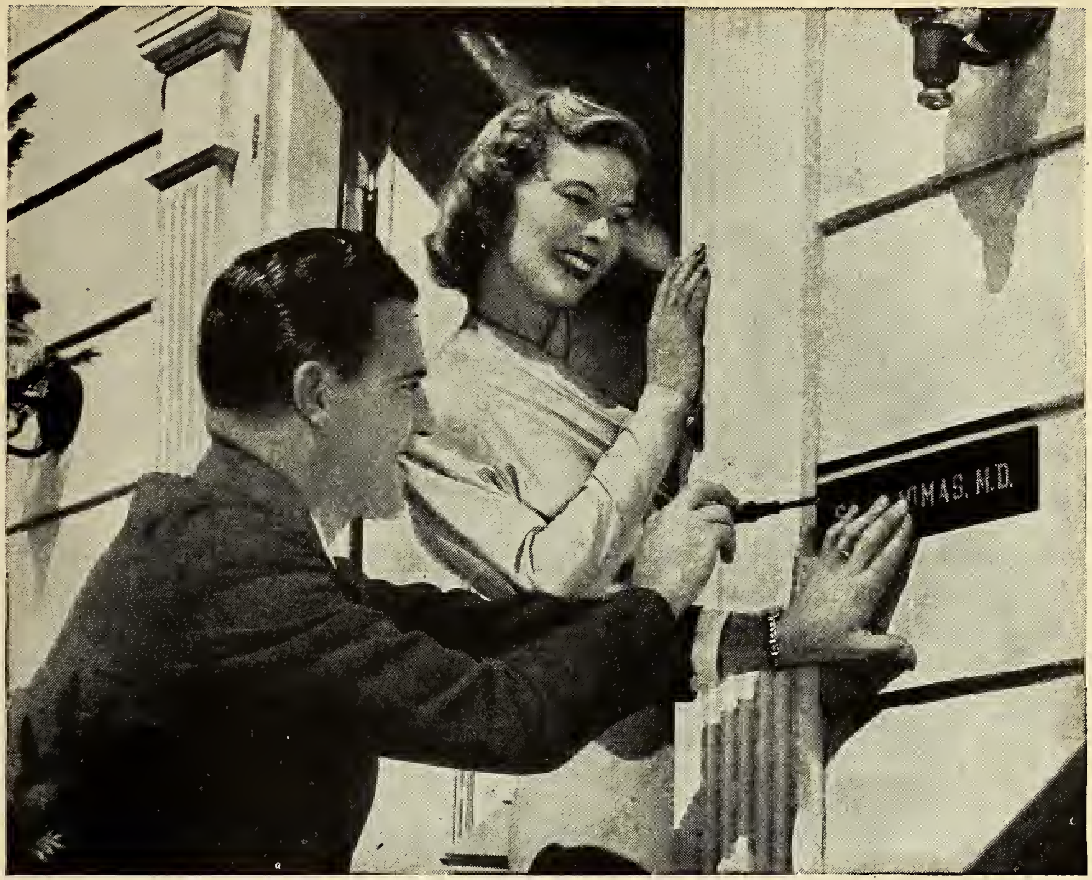

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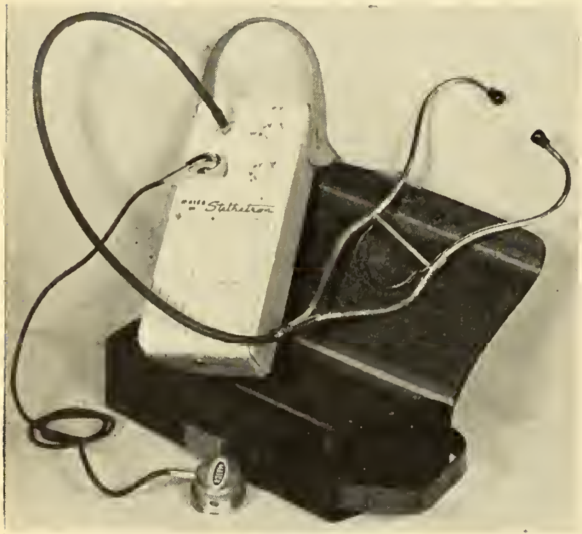

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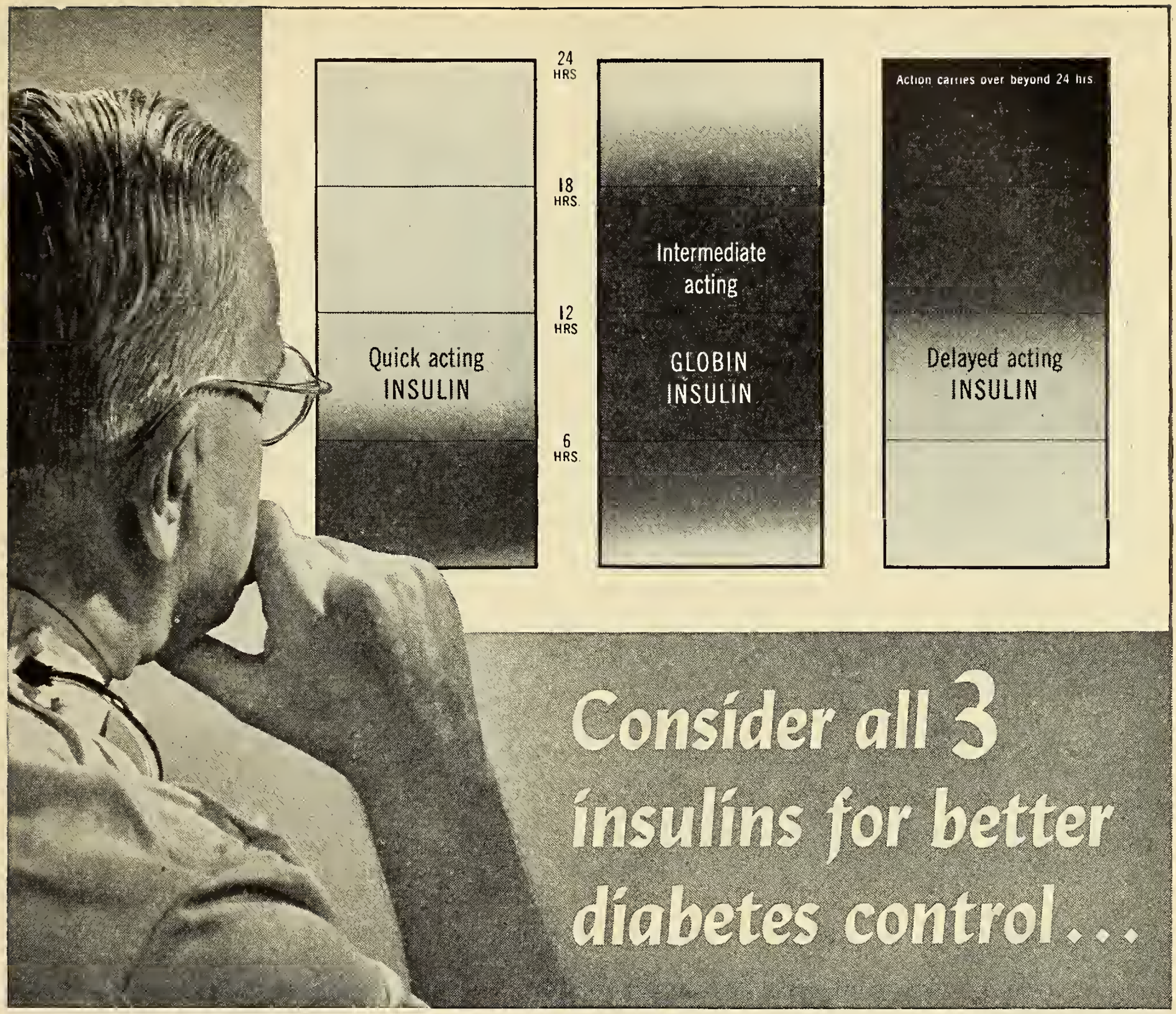
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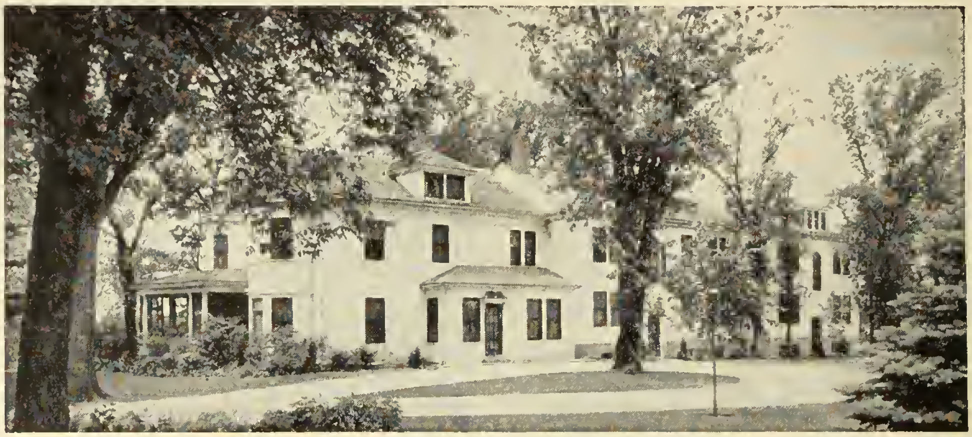

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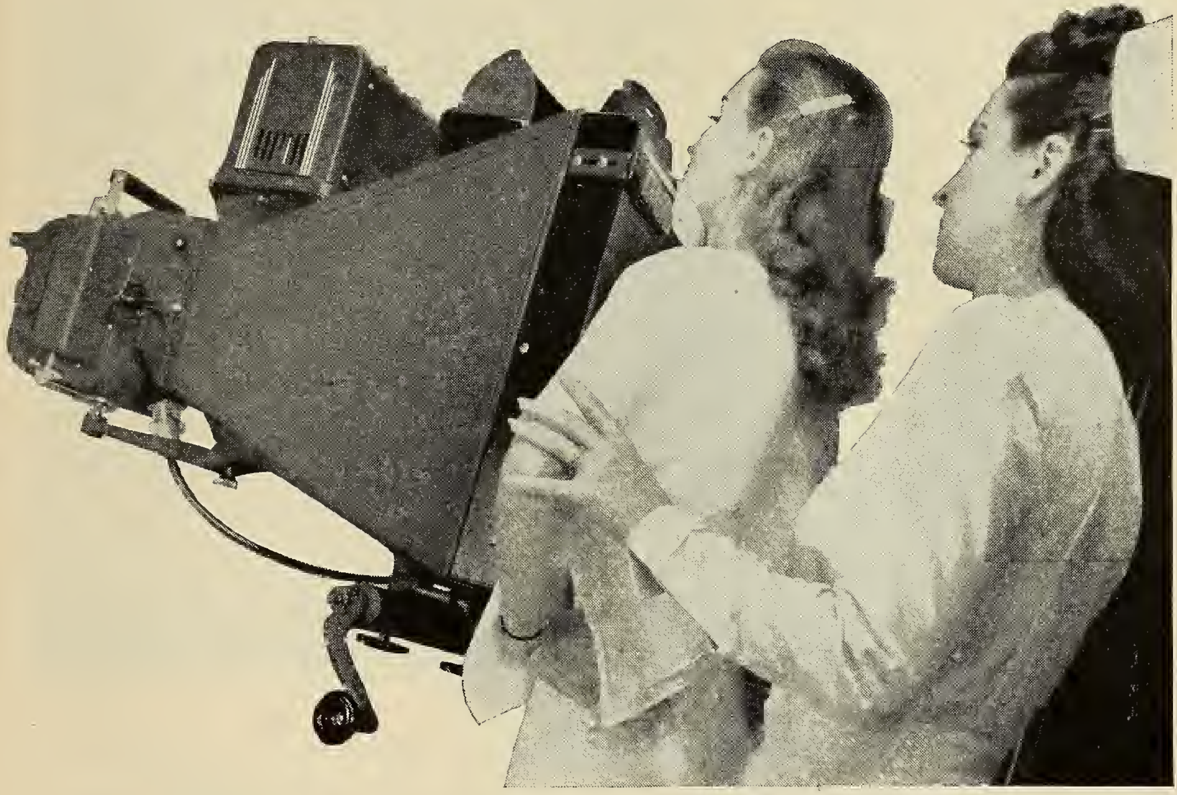

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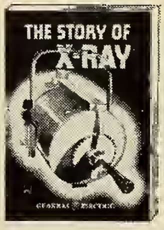

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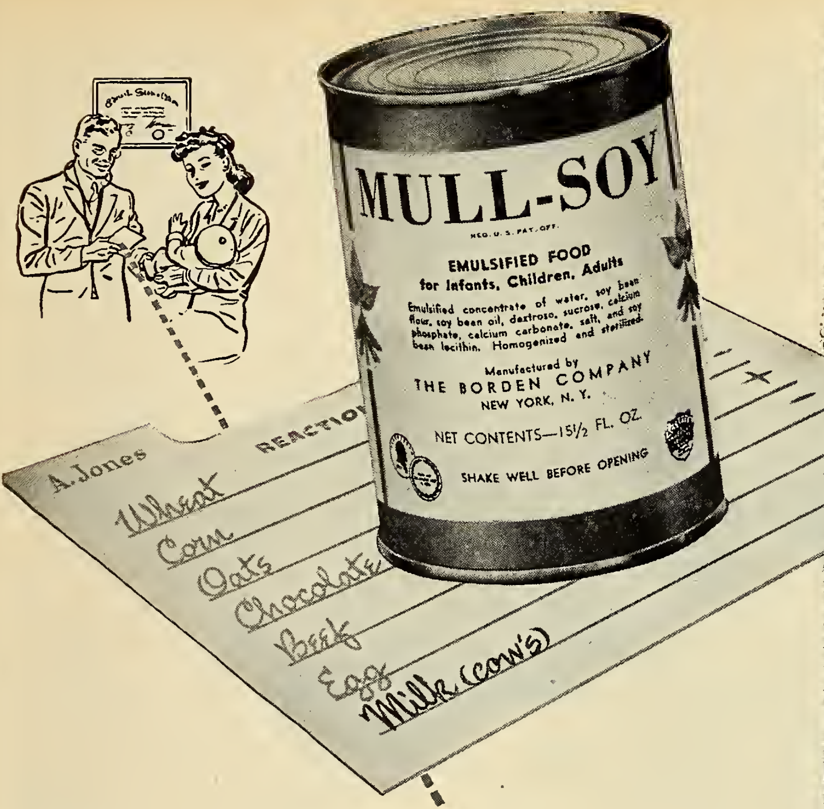
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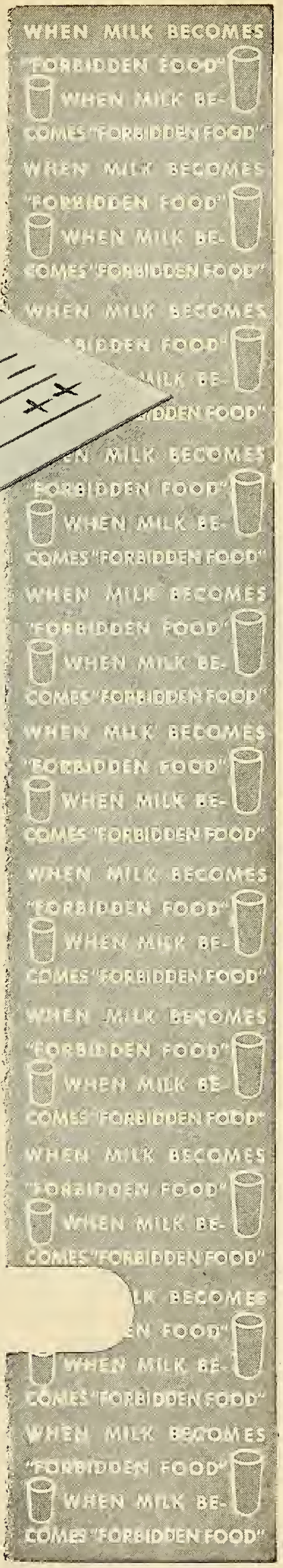
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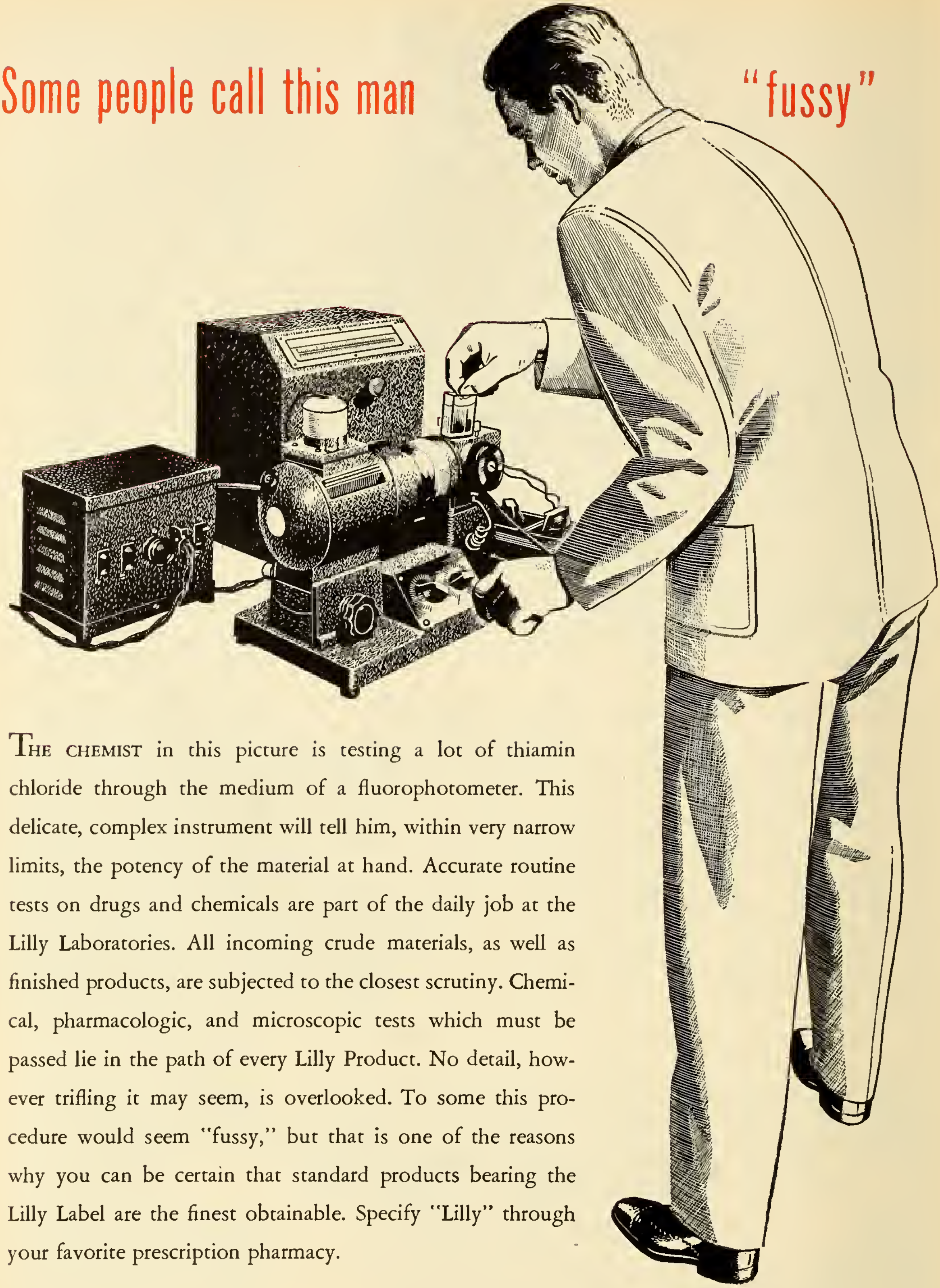

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 March, 1946 No. 3

FACTORS IN RURAL HEALTH IN MINNESOTA

EDWIN J. SIMONS, M.D.
Swanville, Minnesota

It is indeed a pleasure and a privilege to be with you today. This, I believe, is particularly true since one of the objectives of the Farm Bureau is also one of the goals of the Minnesota State Medical Association. This common objective is to see that all of the people of the state, farmers as well as others, are provided adequate high-quality medical care at a cost which they can afford. My remarks today will attempt to portray present conditions of rural health in Minnesota and the efforts being made by the organized medical profession to see that adequate good medical care is available in the near future at low cost.

Before the war, and it is hoped that with military physicians returning to civilian practice, these conditions will soon be repeated; there were 3,600 practicing physicians in Minnesota. Of this number 1,800, approximately, practiced in the urban centers—Minneapolis, St. Paul, Duluth and Rochester. In these centers of population, there were about 1,000,000 of the state's 2,700,000 population. Thus, then, 1,800 physicians provided medical care for 1,700,000 people living in rural districts.

During the war, induction of civilian physicians into the military forces created some maldistribution of civilian physicians. In fact, during the war, there were several instances in which persons living in rural districts had to travel excessive distances for medical care. But before the war, two surveys were conducted, one in 1934 and the second through the press in 1941, to determine whether physicians were readily accessible to all people in Minnesota. Both of these surveys showed that beyond question doctors were available to practically all of the people of the state. It is anticipated that some of the maldistribution of physicians resulting from the war will soon be corrected by the return of military physicians to civilian practice.

The next question that presents itself is, "Under these circumstances, what has been the state of health of the people of Minnesota?" The death rate from all causes has been slightly lower in Minnesota than in the United States as a whole. Life expectancy has increased from forty-nine years at the turn of the century to sixty-one and sixty-five years in 1945 for males and females, respectively. The maternal mortality, newborn and infant mortality rates in Minnesota have been the best of any but one or two states in the Union. The mortality rate from infectious diseases in Minnesota ranks Minnesota among the leading states in public health and preventive medicine. The mortality rate in tuberculosis in Minnesota has decreased to less than one-fourth of what it was in 1910. In fact, in a recent article by Dublin in the *American Magazine*, Minnesota ranked second among all the states of the United States in matters of health.

It appears only reasonable to assume that adequate high-standard medical care is available to all people in Minnesota or the conditions just described could not be true. There are three other factors which are largely responsible for the excellent health of the people of Minnesota. They

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Address of the President of the Minnesota State Medical Association before the 27th Annual Meeting of the Minnesota Farm Bureau Federation at the Hotel Lowry, St. Paul, Minnesota, January 14, 1946.

are: (1) the Minnesota Medical School and University Hospital, (2) the Minnesota Department of Health, and (3) the Mayo Clinic at Rochester. Through these three agencies, the very latest measures in diagnosis, treatment and preventive medicine are made available to the general practitioners and the people of the state. All of these institutions have national and even international reputations which have placed Minnesota in the foreground in all fields of medicine.

So, we arrive at the question, "How is the cost of adequate high-standard medical care to be reduced?" So far as hospital care is concerned, the question has been answered in the Blue Cross Hospitalization Plan. Already, approximately 25 per cent of the state's population participates in this plan. Also, it is anticipated that further increases in hospital beds will be available in the not-too-distant future as a result of the recent passage by Congress of the Hill-Burton Hospital Bill. Governor Thye has already appointed a committee of twenty-four members to study the need of additional hospital facilities throughout the entire state of Minnesota. The federal bill provides as much as 100 million dollars a year for the construction of hospitals. What portion of this may be allocated to Minnesota is dependent on the findings of the committee as well as other factors involved.

Prepaid medical care in Minnesota perhaps should be mentioned under three headings, such as: (1) Plans already in operation, (2) state plans, and (3) national plans affecting Minnesota.

Under the first subdivision falls the Farm Security Administration medical care program. Such plans are now in their fifth year. Originally, farm families of the marginally indigent group in Otter Tail, Mille Lacs and Morrison Counties were eligible to participate. At present the plan is operative only in Morrison County. Participation costs $30 per year per family. Families average 5.2 persons. All medical care except non-emergency surgery is provided in the plan. Free choice of physicians is assured the families.

For the first two years the annual cost per family was $23 instead of $30. During this period the number of families eligible for participation dropped about 50 per cent. Also, during this period it was difficult to convince families that they should join. During the past two and one-half years, even with the annual family cost raised to $30, families voluntarily request membership. In fact, the plan has been so successful from the farmer's point of view that many outside families have had to be refused the privilege of participating.

In the second group, state plans first crystallized at the last session of the Minnesota State Legislature. Then, at the instigation of the Minnesota State Medical Association, enabling legislation was passed for the inauguration of a state-wide prepaid medical care plan. Already twenty-four physicians throughout the state have been chosen to serve as organizing directors of the plan. These twenty-four physicians have been organized in four subcommittees to arrange articles of incorporation, organization and administration, contracts and fees and funds necessary for incorporation. Several meetings of these subcommittees have been held. Articles of incorporation have been drafted but not approved. Discussions are being held concerning the coverage of such contracts. That is to say, it is not known at present whether all medical, surgical and confinement services will be included or whether only surgical and confinement cases will be covered. Also, it has not been determined whether administration will be linked with the Blue Cross Hospitalization service.

It is expected that contracts probably can be purchased by anyone. Free choice of physician is assured contract holders. It is hoped and expected that the contracts will be within the financial reach of all who desire to purchase them. It is not known when the plan will become operative, but these facts have been given you to keep you abreast of the plans to date. Suffice it to say that energetic efforts are being made by the Minnesota State Medical Association to see that prepaid medical care of high quality will soon be available to all people in Minnesota.

National plans, the third category, is one factor which is causing some delay with present state plans. The American Medical Association is considering a national prepaid medical care plan which will cover all states. It is anticipated that some time during the month of February more definitive action will be taken on this federal plan. Until it is known whether or not the national plan is soon to be organized it is not entirely clear whether the final steps in organizing the Minnesota plan should be taken. But it is clear that soon, through either one or the other of these developments, prepaid medical care con-

(Continued on Page 258)

TROPICAL DISEASE HAZARDS IN THE NORTHWEST

R. W. BACKUS, M.D.

Nopeming Sanatorium, Nopeming, Minnesota

TO the average American physician the subject of tropical medicine has a very alien sound. But one of the many things we have learned in recent years is that what is alien is not necessarily unrelated to us. Not long ago Corregidor, Anzio, and Okinawa were strange and curious sounds, but the war brought them to our front door. And as our servicemen and women return they will bring with them medical problems with which we must become acquainted, tropical diseases of which we may hardly have heard, yet which potentially threaten our national health.

In considering tropical medicine, it must be recognized that the term tropical is loosely applied, and not strictly geographic in meaning. Certain tropical diseases, it is true, occur only in the Tropic Zone. But others are more widespread, occurring throughout the world, though more common in the tropics and Orient where climate, dense population, social habits, and poor hygiene provide a more favorable environment for them. Some are even now endemic in the United States, while others have appeared here as epidemics in the past.

The possibility of spread of tropical diseases by returning service personnel depends on a number of factors, of which two are most significant. The first is time. Meleney[22] points out that acute diseases with short periods of communicability such as yellow fever, typhus, plague, and cholera, develop and run their course quickly; hence, if encountered at all, will be dealt with while the veteran is still en route home, or before discharge. They therefore have little chance of establishment in the United States and civilian doctors run even less chance of meeting them. In contrast are those diseases which are chronic, with a long period of incubation or communicability; hence, a chance to bridge the period of demobilization. Such are malaria, the dysenteries, and the helminth infestations. These we will undoubtedly see to a greater or lesser degree.

A second factor determining hazard of introduction or spread of a particular disease is means of transmission. Some are bacterial in origin and transmitted directly. Some are carried by insects or require presence of other animals as intermediate hosts. Such diseases can be brought back by the returning veteran, but can be transmitted to others only if the proper insect vector and intermediate host occur here.

Practically, therefore, the physician may expect two types of tropical disease problems in his practice. The first may be illustrated by bacillary dysentery, a bacterial infection, or amebiasis, a protozoal disease; either of these may be communicated by direct fecal contamination, or indirectly by the housefly. Such diseases may be seen either in the returning veteran or in the civilian whom he contacts. The second type will be seen only in the veteran. It is well illustrated by African sleeping sickness or trypanosomiasis, which requires the tsetse fly for transmission. This insect is not native to America, and its introduction is not likely. It is quite probable that an occasional serviceman from Africa may carry the disease home unrecognized, and thus come to the physician for diagnosis. But passage of the disease to others is and will remain extremely unlikely, if not impossible. We need not look for it in those who have not been in Africa. This brings out a significant point in dealing with all exotic diseases: ask where the patient has recently been.

Malaria

Turning now from general principles to specific diseases, authorities agree that of all hazards to be anticipated, the chief is malaria. Branch[2] and Getting[14] emphasize that it is the most common, widespread, and lethal disease of man. Throughout the world it is estimated to kill over three million annually. "After disembarkation and demobilization, all previously malaria-free individuals will cease prophylactic treatment. Any change in living may bring out the disease. Already we are having deaths from such disease treated too little and too late." Surgeon General Parran[25] says, "Outside of mental diseases, there is no other disease of comparable importance against which we have made less progress during my generation." Malaria in varying degree is present in most of the countries to which our forces have gone—Africa, the Mediterranean basin, Asia, South Pacific, East Indies, and South America.

As to etiology, the parasitic plasmodia are carried by various species of Anopheles, several of which occur in the United States. The only one of significance in this area, however is A. quadrimaculatus. This mosquito is fairly common throughout southern Minnesota, the eastern Dakotas, and on east and south to the Atlantic border. It is well known that malaria was endemic in much of this region in years past, but modern screening, better mosquito control, improved care of the malaria case, and perhaps climatic factors inimical to the parasite have made the disease relatively uncommon. Returning service personnel will undoubtedly serve as a pool of malaria infection which may again establish the disease for a period of years unless a well-planned defense is provided by State or Federal public health authorities. The possibility of introduction of some other mosquito vector hitherto unknown in this region is also to be noted, particularly in this era of air transport. Anopheles gambiae was thus introduced into Brazil from Africa some years ago leading to a disastrous epidemic. Public health authorities moved in and finally eliminated the mosquito by a classic anti-mosquito campaign, but only after a program lasting two to three years and costing two and one-half million dollars.

In considering malaria clinically, one must not forget its pathology. The parasites involve primarily the reticulo-endothelial system, leading to splenomegaly and anemia. In addition, there may be liver enlargement and parasitic invasion of capillaries of the brain, meninges, lungs, and intestine, causing cerebral and other complications. Renal damage may be revealed as blackwater fever, due to acid hematin deposits in urinary tubules. The classic picture of remittent fever occurring at forty-eight- or seventy-two-hour intervals is well known. It must be understood, however, that such nice regularity is not to be expected in every case, or even the average case, particularly in this region. Any unexplained fever, no matter whether regular or irregular, marked anemia, splenomegaly, recurrent diarrhea, or sudden, severe cerebral manifestations require immediate and intensive blood smear examination for parasites, if the patient has formerly been in an endemic malaria region. Diagnosis must be based on positive blood findings; smears should be prepared by both thin and thick film techniques, and should be repeated on consecutive days if initially negative.

The laboratory differentiation of the several malaria parasites is not merely of academic interest. It is of definite importance in treatment and prognosis. It is generally agreed that quartan and ovale forms are not to be expected commonly in the United States. Differentiation will, therefore, lie chiefly between the vivax and falciparum or aestivoautumnal strains. All authorities agree that falciparum malaria is the more vicious type, with parasites sometimes invading up to 5 per cent of the red corpuscles, leading to severe cerebral and meningitic manifestations and the dreaded blackwater fever. On the other hand, Butler and Sapero[5] point out that as seen in the South Pacific, falciparum malaria has relatively low inclination to latency, with a recurrence rate of only 5 per cent; hence it is less likely to be carried into the United States. Also as Meleney[23] notes, it is more amenable to suppression by prophylactic use of atabrine.

The commoner tertian or vivax malaria as found in the South Pacific is said, on the other hand, to be very chronic, resistant to atabrine, tending to recurrence over a long period of time. It is two to three times as apt to recur as our domestic strain of tertian malaria, and may be expected to continue in a patient for an average of two or more years.

The treatment of malaria has had interesting developments as a result of the war. For example, Talbot[31] reports on two groups of men in the South Pacific endemic area. An army group was given routine suppressive doses of atabrine. A navy group in the same area was treated only as clinical malaria appeared. Later a survey of the two groups showed that 48 per cent of the army men had latent malaria as shown by positive blood smears, as compared with 66 per cent of positives in the untreated navy group. Further, clinical malaria developing in the army group during suppressive treatment tended to be more severe than in the untreated navy men. This and other similar experiences have led to the belief that where proper laboratory facilities exist, it is better to omit suppressive therapy even in heavily endemic areas, and treat only active clinical cases.

Routine treatment is thoroughly covered in the Surgeon General's Circular Letter No. 153.[29] It is here emphasized that the plasma level of antimalarial drugs is fundamental in determining their efficiency. Of the two commonly used drugs, quinine localizes less in the tissues and so acts sooner, while atabrine first saturates the tissues and thus acts longer but more slowly. For suppressive therapy, advisable only when troops must be inadequately protected in heavily endemic regions, the recommended dosage is: atabrine 0.1 gm. at the evening meal 6 days a week, or quinine 0.6 gm. daily at the evening meal. For proper suppression the drug must be taken regularly.

For clinical treatment of the active uncomplicated case, recommended therapy is: atabrine 0.2 gm. with 1 gm. sodium bicarbonate in 200 or 300 c.c. of water or fruit juice every six hours for five doses, then 0.1 gm. t. i. d. p. c. for six days; or quinine may be given, 1 gm. t. i. d. p. c. for two days, then 0.6 gm. t. i. d. p. c. for five days. In falciparum cases, to control the gametocyte or sexual stage, plasmochin may be necessary, though it is a toxic drug and must be used with caution; give it after a course of atabrine, or along with quinine, 0.01 gm. three times daily for four days, with 1 gm. sodium bicarbonate per dose. For severe cases, or those with complications of vomiting or coma, atabrine is preferred, in doses of 0.2 gm. in 5 c.c. of sterile distilled water intramuscularly in each buttock, repeated one or two times at intervals of six to eight hours if necessary. Turn to oral medication as soon as possible such that total dosage is 1 gm. in forty-eight hours, then 0.1 gm. t. i. d. p. c. for five days; or quinine may be given, 0.6 gm. in 300 to 400 c.c. sterile isotonic salt solution intravenously, repeating if necessary, and following with atabrine or quinine by mouth as soon as possible. Treat relapses the same as first attacks. If relapse is suspected, but blood smears negative, parasites may usually be demonstrated after giving epinephrin, 0.5 c.c. of 1/1000 solution subcutaneously. In all malaria treatment, possibility of quinine or atabrine sensitivity must be kept in mind, in which case the other drug must be relied on alone. Totaquine, the purified total alkaloids of cinchona, may be used as a substitute for quinine, in equal dose.

Helminth Infestations

Turning now to worm diseases, the commonest throughout battle areas has presumably been ascariasis, due to the roundworm often found in the United States. The life cycle of this worm involves passage of eggs in the stool, contamination of water or food, particularly vegetables or fruits, and re-entrance to the human intestinal tract. Here the egg hatches, the larva penetrates intestinal capillaries, is carried to the lung, penetrates the alveolar wall, is coughed up to the larynx, reswallowed, and develops into the adult worm, ready to produce more eggs. Preferred treatment is hexylresorcinol (coated pills) 1 gm. on an empty stomach, followed in an hour by a saline cathartic. This is also effective against pinworms and whipworms.

Hookworms are fairly common in the more cultivated wet areas in the Pacific, but the disease picture is sufficiently well known in this country not to require special discussion here.

Filariasis, a roundworm infestation of different type, has appeared rather frequently among troops in certain South Pacific regions. By its very nature, causing tissue swelling, edema of the lower extremities and genitalia, and sometimes elephantiasis, it has been much feared by servicemen and many physicians. The disease has existed for many decades as an endemic focus in Charleston, South Carolina, to which it was brought by the slave trade. Due to natural conditions unfavorable to the parasite, the disease has almost disappeared there. As seen in the Pacific, the complaint is prevalent in rather sharply limited areas where dense population and presence of a suitable mosquito carrier have made a fertile field for the infection when once introduced. The cycle begins with sucking up of microfilariae or young parasites by a mosquito, Culex fatigans or other suitable vector; the parasites invade the mosquito thorax muscles, migrate to the proboscis as larvae, and are re-deposited in man, find their way to lymphatics, and there mature, producing their microfilarial young. The worm, called Wuchereria bancrofti, is hair-like in diameter, 2 to 3 inches long, and by preference locates in lymphatics of the groin and genitalia. Clinical symptoms appear only when parasites are introduced in considerable numbers by frequent mosquito attacks. Troops soon moved from an endemic area apparently suffer little damage from an early infection. Even though considerable swelling has appeared, it is noted that in nearly all cases the lymphedema quickly and permanently disappears on return to a temperate climate. Diagnosis of early cases may usually be made by finding enlarged epitrochlear glands and a rubbery swelling of the spermatic cord. An intradermal diagnostic test using an antigen prepared from Dirofilaria immitis[32] has been reported valuable in detecting early suspects. Holmes[17] recommends excision of enlarged nodes when troublesome. No other specific therapy would appear necessary in areas where proper mosquito carriers do not occur, but where more aggressive therapy appears indicated, lithium antimony thiomalate, as recommended by Brown,[3] would appear promising. Stibamine glucoside[10] ("neostam"), useful in kalaazar, has also been suggested.

Onchocerciasis and loa loa, causing fugitive subcutaneous swellings, may possibly be seen in returning troops, and will be of clinical significance, we are told, chiefly when involving the eye, causing conjunctival swellings and occasionally blindness. Dracontiasis or Guinea worm may perhaps occur as subcutaneous swellings and blisters of the legs and feet. Local treatment may be necessary. None of these maladies can be expected to spread in this country.

Tapeworm and echinococcus infections may be dismissed as unlikely hazards in the United States, resulting only from the use of grossly contaminated water or food, a point strictly watched by the army sanitation authorities.

Blood Flukes

Diseases resulting from infection by various flukes are, in contrast, expected to appear in varying degree. Several types, Fasciola hepatica, Chlonorchis sinensis and others, are unlikely, requiring as they do the eating of uncooked fish, etc. Real hazard exists in the case of the schistosome group, however; the eggs of these parasites are passed in the stools or urine, develop in fresh water into ciliated larvae, invade certain species of snail, re-emerge into the water, and penetrate the skin of man when he wades or bathes there. They proceed to the capillaries of the intestine, urinary bladder, or lung, and there mature, and from those organs the eggs enter the stool or urine. Due to the nature of war, with land troops frequently subject to immersion in contaminated pools and streams, it appears unavoidable that infections must occur in endemic areas. Schistosoma hematobium heavily infests North Africa and to a less extent other parts of Africa and the Near East. Clinically it involves chiefly the venous plexus about the urinary bladder, causing bladder wall abscesses, urgency, pain, and hematuria. S. mansoni occurs widely in Africa and northern South America; S. japonicum is found in Japan, Central China and the Philippines. Both these diseases center mainly in the intestine, with dysenteric symptoms and bowel ulceration, but secondarily may show marked splenomegaly and hepatomegaly. Diagnosis of all forms is through isolation of the parasitic eggs. Treatment is specific, using trivalent organic or inorganic antimony, of which the best is neoantimosan (fouadin) intramuscularly or intravenously. Emetine is also effective, but must be used with caution.

So far as is known at present, schistosomiasis cannot be spread in the United States due to absence of suitable intermediate hosts, certain freshwater snails. However, it is possible that facultative hosts may develop among our own snail species; investigations are now being carried out along this line. Certainly the disease should be watched for among returning veterans, for if present, it is of serious import.

The Dysenteries

The chief advance in the subject of the dysenteries recently has been in the classification and therapy of bacillary dysentery. Callender[6] and others, advocate that this term be broadened to include not only the Shigella dysenteries of Shiga, Flexner, Sonne, et cetera, but also the severe diarrheas of the Salmonella group. It has also been suggested that the Shigella dysenteries be called Shigellosis, paralleling the term brucellosis. All of the intestinal bacillary infections are common under war conditions, particularly in the Orient, and have occurred numerous times among service personnel. Differential diagnosis clinically is most accurately done through careful stool examination, including culture on special media. However, careful epidemiologic analysis will also point to a diagnosis in many instances. Thus an epidemic of food poisoning appears within a very few hours after the ingestion of the causative food, is violent, but should quickly clear under proper treatment. Salmonella infections show up as epidemics, but with an incubation of hours or days, with fairly acute fever and general constitutional symptoms, subside more gradually. Shigellosis varies much more in incubation interval, from days to weeks, shows less in the way of fever and general symptoms, but causes more serious bowel inflammation, with ulceration, bloody stools and tenesmus, continuing over a longer period of time. Amebiasis occurs as a much more sporadic disease, varying from very mild to severe, and from acute to extremely chronic. For cases particularly difficult to diagnose, the taking of swabs by the technique of Watt and Hardy[16] may help.

Therapy of the bacillary dysenteries[4,12] should begin with 2 to 4 drams of saturated sodium sulphate solution; after two hours give sulfaguanidine or sulfasuxidine 5 gms. q.i.d., or sulfadiazine or sulfathiazole, 1 gm. q.i.d. for two days, then t.i.d. until the stools are normal for two to three days. It is well to check by daily stool culture until two or more daily cultures are negative. Some authors prefer sulfaguanidine, while others prefer the soluble drugs, particularly sulfadiazine.

Though affecting many of our troops while abroad, bacillary infections run too short a course and are too well controlled by adequate epidemiologic measures to threaten serious epidemic spread in this country. All of the infections mentioned are already found here frequently as a matter of fact, and such sporadic outbreaks may be expected to continue.

Amebiasis has been the subject of numerous surveys in the United States, with reports of incidence up to 15 per cent or more. The great majority of cases are silent or minimal symptomatically, hence, seldom secure treatment. Acute, fulminating cases may occur, however, as well as the less common hepatitis and liver abscesses. Diagnosis in the acute case through identification of motile amebae in a warm, fresh stool is a relatively simple procedure. For demonstration of cysts in the chronic case or carrier, rectal swabs may be necessary, with staining by special methods of Faust and D'Antoni.[13] Treatment of the acute case of dysentery or liver amebiasis should begin with emetine hydrochloride, gr. i hypodermically for six days or less. Emetine is a potent myocardial poison and administration must be guarded. In chronic cases, and following emetine in acute cases, any one of several preparations may be used. Carbarsone, an arsenical, is given twice daily for ten days, and in more critically ill patients is given in enemas. Chiniofon (yatren) is an iodine derivative much used formerly, but less in favor as other preparations have been found. Diodoquin, 1.5 to 2 gm. b.i.d. for ten days, or vioform, 0.25 gm. t.i.d. for ten days are also recommended, particularly in subsequent courses of treatment in relapse cases.

Bacterial Diseases

Of the bacterial infections, leptospirosis (Weil's disease, infectious jaundice) is so widespread as hardly to fall in the tropic disease list. It is endemic in Japan. The spirillum is carried by rodents and excreted in their urine. In man the chief effects are swelling and destructive changes in the liver, spleen, kidneys, and lymph nodes. Onset is acute, with fever, headache, nausea, vomiting, diarrhea, and jaundice. Organisms are found in the blood early, and later in the urine for as long as 100 days. An agglutination test and guinea-pig inoculation aid in diagnosis. The possibility of this disease spreading in the United States is undoubtedly present, but uncertain in degree. Treatment is primarily a nursing problem, but may be aided by a specific antiserum.

Relapsing fever, a related disease of wide distribution, occurs in modified form in southwestern states and Central America. It is transmitted by lice or ticks parasitic on small rodents. Clinically the disease resembles the preceding, but icterus and renal changes are less intense and the fever has a definite periodicity, with free intervals of a week or more. Diagnosis is confirmed by finding the causal spirochete in the blood. Treatment by 1 or 2 doses of neoarsphenamine is specific and effective, but should be delayed when a fever crisis is impending. Both relapsing fever and leptospirosis should be subject to epidemiologic control through elimination of the insect vectors in a threatened area with the new DDT preparations.

Yaws, also called framboesia, is a skin disease with constitutional manifestations, caused by a treponema carried by direct contact or flies. It is closely related to syphilis in that it gives a positive Wassermann reaction, is prevented by a previous attack of syphilis, and has marked clinical similarities. The primary lesion usually occurs on the lower extremities, with local adenopathy. There is a secondary septicemia with general adenopathy and fine desquamating papules lasting several weeks. The later tertiary lesions are destructive, with deep scars and deformity; ulcerative rhinopharyngitis is a common development. Organisms should be demonstrable in the primary lesion. Treatment is with neoarsphenamine plus bismuth or carbarsone. Appearance of this disease in the veteran returning from Africa, the East Indies, and the Pacific Islands is presumably possible. Medical standards in this country should prevent any significant spread.

Plague, whether of the bubonic or pneumonic form, should not occur through importation by military personnel. In this connection, however, physicians in this region should perhaps be more aware of endemic plague which occurs among thirty-two or more species of wild rodents in our northwest states, as far east as North Dakota. Human cases have thus far been few and sporadic. When recognized in time, treatment by sulfathiazole has proved quite effective.

Cholera should be mentioned here for sake of completeness, but its introduction into the United States by military personnel is not to be expected. The violence of the infection and brevity of incubation period would surely bring out the infection before the patient disembarked. It is of interest that sulfaguanidine is reported by Huang[18] to have given twenty-one cures in twenty-two patients whom he treated.

Leishmaniasis

Under the term leishmaniasis are grouped three diseases caused by protozoa of special type. Leishmania donovani and one or more related forms are transmitted by species of Phlebotomus or sand fly, and give rise to kala-azar or visceral leishmaniasis. The parasites invade the reticuloendothelial system, causing splenomegaly, hepatomegaly, lymphadenopathy, and occasionally, ulcers of the skin and intestinal tract. The incubation period is usually two to three months. Onset is slow, with irregular fever, visceral enlargement, dark skin, and tendency to dysentery. Blood examination shows anemia, leukopenia, and perhaps the diagnostic parasites, Donovan bodies. Splenic and liver puncture may be resorted to for diagnosis in questionable cases. Therapy is by means of antimony compounds, of which the preferred form is neostibosan or neostam, given intravenously or intramuscularly in graduated doses, one course of ten injections usually sufficing. The disease occurs endemically but fairly widely in Asia, Africa, the Mediterranean basis, and South America. Infection of service personnel may occur, but transmission within the United States is very unlikely as sand flies occur only rarely; they apparently are not found in the Northwest.

Cutaneous leishmaniasis or oriental sore is a maculo-papular, ulcerative, occasionally tuberous skin disease found around the Mediterranean, in India, and South America. Incubation may be as long as three months, and the cutaneous lesions may remain active for over a year. Diagnosis is through finding of intracellular Donovan bodies in ulcer scrapings or biopsy. Treatment is by antimony compounds in smaller doses than those required for kala-azar. Due to its site and nature, this form of leishmaniasis will probably have prompt attention from the military or home physician. In the absence of the sand fly, the disease may be ignored as an epidemic hazard in this country.

Leishmaniasis americana or espundia is limited to Central and South America, and again the sand fly is its carrier. The lesions are flat papules progressing to deep ulceration on the mucocutaneous areas about the mouth, nose, and throat, similar in chronicity to oriental sore. Diagnosis is established by finding the Donovan bodies in ulcer margins. Therapy is satisfactory by use of intravenous antimony tartrate or fouadin.

Trypanosomiasis

Trypanosomiasis is due to protozoan parasites which infest many of the domestic and game animals where they occur. African trypanosomiasis or sleeping sickness has two forms, the West African and East African, due to different parasites, but both transmitted by the tsetse fly. The disease begins with a red nodule termed a trypanosome chancre, which subsides after a few days. The second stage is marked by fever, erythema, malaise, anemia, headache, and lymphadenopathy which particularly involves the posterior cervicals. This stage may last for an indefinite period and may end in death. Most cases eventually go on to a third stage of marked weakness, asthenia, shuffling gait and stupor, the true sleeping sickness. This proceeds to certain death. Diagnosis rests on finding the causative organism in the peripheral blood, or later on in the lymph nodes or cerebrospinal fluid. Early cases respond well to therapy with Bayer 205, given intravenously. For later cases in which the nervous system is affected, tryparsamide must be used; this, however, is effective only in the West African form. In the East African type the disease proceeds more rapidly, and death usually occurs within a year.

Authorities agree that sporadic cases of African trypanosomiasis may occur among American servicemen, and due to the slow course of the disease, may appear after return to the States. The disease must, therefore, be kept in mind, in view of the grave prognosis if undiagnosed and untreated early by specific agents. Spread of the disease in this country would appear impossible in the absence of the tsetse fly.

American trypanosomiasis or Chagas' disease occurs in South America and Central America, where it is parasitic in rodents and other small animals. It is transmitted to man by triatomas, assassin bugs. The initial lesion is often on the eyelid, with edema and conjunctivitis. Trypanosomes appear in the circulating blood, but assume leishmania forms in the muscles. Myocarditis, brain inflammation, visceral cloudy swelling and lymphadenopathy result. The acute stage is marked by fever, edema, splenomegaly, cardiac weakness and arrythmias, and perhaps meningo-encephalitis. The chronic stage is characterized by general visceral enlargement, lymphadenopathy, and irregular fever, with all symptoms gradually diminishing. Death often comes through heart failure. Diagnosis may be established by identifying parasites in circulating blood or smears of lymph gland pulp. Guinea pig inoculation may be necessary. No direct method of treatment has proven effective, but Bayer 205 is reported on favorably. Attacks aimed at the assasin bugs may prove worth while in endemic areas. Like the preceding diseases, American trypanosomiasis may perhaps appear occasionally in service personnel, but transmission within the United States would appear impossible except for the southwestern states, where the assassin bug is advancing from Mexico.

Rickettsial Diseases

Of the rickettsial infections, only two need attention here. Typhus, widespread in the world and prone to increase under wartime conditions, occurs in two forms. The epidemic form is carried by the body louse, infection apparently taking place by crushing of louse tissues or feces into abrasians, rather than through bites. Following a brief incubation period there is onset of sudden, severe headaches, fever, stupor, conjunctivitis, vomiting; later a rash appears, and still later coma, prostration, hemorrhages, ending often in death in twelve to fourteen days by bronchopneumonia, cardiac failure and exhaustion.

The endemic form is transmitted by the rat flea, and due to a slightly different parasite. The disease is less virulent than the epidemic form. Both types may be confirmed in the laboratory by agglutination of X^{19} strain of Bacillus proteus (Weil-Felix reaction). Active treatment of typhus is largely supportive and non-specific. Effective prevention, however, is provided by Weigl's vaccine, a glycerine suspension of infected lice intestines, or by a vaccine prepared in an egg-yolk medium. Due to the short incubation period, the violence of the disease, et cetera, it would appear nearly impossible for any significant number of typhus cases to reach this country in returning armed forces. Furthermore, with sanitary standards existing in the United States, and the potency of our newer insecticide powders, the possibility of a typhus epidemic seems out of the question.

However, a related infection appears of more concern to our present service forces. This is tsutsugamushi fever, or Japanese river fever, a rickettsial infection carried by certain mites in Japan, Korea, and Formosa. A variation of this, called scrub fever, is common in many of the South Pacific islands, and has laid low a fair number of our troops in endemic areas. A small necrotic ulcer initiates the infection, followed by lymphadenopathy, lymphangitis, an eruption lasting six or seven days, bronchial symptoms, muscle and joint pains, prolonged intermittent fever, and often delirium. Fatality rate is said to be about 15 per cent. The disease can be identified by agglutination of the OXK strain of B. proteus. Like epidemic typhus, treatment is symptomatic and supportive only. No preventive therapy has been announced.

Virus Infections

Coming to virus diseases, two seem worthy of consideration. Yellow fever, a severe epidemic and endemic infection carried by various mosquitoes, particularly Aedes egypti, is widespread in western Africa and certain parts of Central and South America. It has invaded North America more than once. In the human body the virus attacks the capillary lining, with virusemia and visceral necrosis. The clinical picture is dominated by fever, jaundice, slow pulse, hemorrhages, and severe kidney damage. Death occurs in 10 to 60 per cent between the sixth and tenth days. Diagnosis can be proven by a mouse protection test. There is no specific treatment of the active case, but excellent protection is provided by vaccination with an avirulent neurotropic virus which is good for four years. Anti-mosquito measures in endemic regions and quarantine procedures in nearby ports have proved of value. Due to fairly rigid observance of such methods, it is believed that yellow fever should not further threaten North America.

Dengue, breakbone fever, is another virus infection carried by Aedes; it occurs in the Pacific, Near East, South America, West Indies, and occasionally in southeastern United States. After a short incubation period the patient complains of joint pain, headache, erythema, fever, and severe general malaise. There is a brief remission, then a return of symptoms, with skin rash, desquamation, and leukopenia. Diagnosis is presumptive, based on epidemiologic factors. Treatment is symptomatic. No preventive is thus far available. Though troops in the South Pacific have suffered dengue epidemics at various places, transmission in this country would generally be impossible due to absence of Aedes.

A number of other tropical maladies—leprosy, sprue, the less common virus, rickettsial, and parasitic diseases might be discussed here, but do not appear pertinent to the subject as not posing significant hazard to this region.

Conclusion

The accompanying table summarizes the likely tropical disease hazards in the Northwest.

Disease	*Hazard in Returned War Veteran*	*Hazard in Others*
Malaria, Tertian (Vivax)	††	†
Aestivoautumnal (Falciparum)	†	?
Quartan and Ovale	?	0
Ascariasis	†	?
Hookworm	†	0
Filariasis (Wuchereria Bancrofti)	†	0
Other types	†	0
Tapeworm	?	0
Echinococcus Cyst	?	0
Schistosomiasis, Urinary or Intestinal	†	??
Other Fluke Diseases	?	0
Bacilliary Dysentery	†	†
Amebiasis	†	†
Leptospirosis	†	?
Relapsing Fever	?	0
Yaws	†	?
Plague	0	0
Cholera	0	0
Leishmaniasis	†	0
Trypanosomiasis	†	0
Typhus, Epidemic	0	0
Endemic	?	?
Tsutsugamushi Fever, Scrub Fever	0	0
Yellow Fever	0	0
Dengue	0	0

Two general points of caution mentioned by Guldseth[15] and various writers should be noted in dealing with patients who have been in tropical and oriental countries. The first is that malaria, yaws, and a number of other tropical infections may cause positive Wassermann, Kahn, and Kline reactions, leading the careless diagnostician to a wrong conclusion. The second is that returning personnel must be carefully checked by history and blood smears before use as blood donors, if accidental transmission of tropical disease parasites is to be avoided.

In general, the practicing physician or surgeon can prepare himself in four ways to meet the tropical disease threat in the postwar years. First, he should know what diseases are likely to or possibly can appear. Second, he should learn the habit of including tropical diseases in his bedside diagnosis, and not merely leave them as abstract concepts on his bookshelves. Third, he might well see that his laboratory technicians are alive to the special studies so essential in this line of work. And fourth, he might determine where special consultants can be found if need should arise.

In this connection, it is of interest to note that medical educators are aware of the need for wider knowledge of tropical medicine. There are plans for broader courses in a number of medical centers, and for the formation of some type of consultant bureau. Further, concentrated courses have been and are being given to selected groups of physicians under the auspices of the American Association of Medical Colleges, the Co-ordinator of Inter-American Affairs, the Surgeon General, and other agencies, the schedule including a period of field work in Central or South America.

Thus, there is hope that America's wider ventures in international relations may bring new health to other peoples, while maintaining reasonable safety for our own.

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FACIAL INJURIES

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THE two immediate concerns in a facial injury are the maintenance of the airway and the control of bleeding.

The tongue must be maintained in its forward position by placing the patient face down. If necessary direct traction is made on the tongue. This is rarely necessary in a conscious patient, except when the symphysis of the mandible and the floor of the mouth are badly disrupted. Bleeding can usually be controlled by pack and manual pressure.

If a trachectomy appears to be needed it should not be postponed until it becomes a desperate and hurried measure. It should be done in an orderly manner under local anesthesia with the trachael opening placed well below the level of the cricoid cartilage. An anxious and hurried tracheotomy is necessary more often because of the surgeon's procrastination than because of immediate urgency at the moment of the injury. When the decision is in doubt one should lean in the direction of commission and create a tracheal opening. It provides an assured airway and a fine means of pulmonary drainage and the patient has a tranquil postoperative course which diminishes the need for sedation and assures one of the patient's co-operation in combating atelectasis.

Shock is not a common feature of facial injuries unless they be extensive and involve vessels of good size. Plasma is a useful immediate measure for combating shock when it exists but the blood volume should be restored at the first opportunity by whole blood transfusions.

It is not unusual in extensive injuries of the face and jaws to have associated cranial involvement. After establishing an airway and restoring the patient's circulatory efficiency one should therefore perform a neurological examination and establish the presence or absence of intracranial involvement.

In severe smashes of the central third of the face which occur as a result of the forward motion of the face against some immovable part of a vehicle or airplane a compression fracture of a vertebra is a common associated injury. It is well to bear this fact in mind when one examines the rest of the skeletal system for injuries.

The facial skeleton when considered surgically can well be divided into two main portions: the mandible, and the bones comprising the middle third of the face.

One has two objectives in the care of a fractured mandible. The first is to get bony union and the second is to obtain good dental occlusion. To accomplish these one sets the teeth of the mandible into proper occlusion with the teeth of the maxilla and fixes them there. The means of fixation vary with different oral surgeons but so long as the fixation is firm and the position is good the results tend to be satisfactory.

There are certain fractures of the mandible that deserve special consideration. Of these, the first perhaps is a fracture of the condyle of the mandible. In general, because of the inaccessibility of the condylar portion of the mandible it is impossible to restore its alignment with the main body. An accepted method of treatment of such fractures is simple splinting of the mandible during the period of pain and swelling. Splinting is done in proper dental position by occluding the lower teeth to those of the maxillae. After the initial period of pain has passed motion is encouraged and nonunion at the fracture site is established. A method of open reduction to re-establish proper alignment of these fractures may be used, but the first and simpler method has seemed adequate.

Since the teeth are the means of both fixing and positioning the mandibular fragments, a special problem arises when a posterior mandibular fragment with muscular attachments is separated from the remainder of the tooth-bearing portion of the mandible by a fracture line posterior to the last tooth. This fragment, often referred to as the edentulous posterior fragment, is comprised of the vertical ramus of the mandible and any of the horizontal portion extending forward to the fracture site. There are different means of fixing this fragment in position during the

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healing period. None of the means is applicable in all cases. In some cases a controlling wire is inserted at the posterior margin of the vertical portion of the mandibular ramus and is let through the skin posteriorly beneath the lobe of the ear to a hook descending from a plaster head cap. In others a small half-round bar is fashioned and secured to the arch of the lower teeth. A posterior extension of this bar can be bent and angled so that its sharp terminal end can be set into the posterior fragment of the mandible much in the manner of a skeletal pin, thus maintaining the relation to the anterior fragment. It is in cases of the edentulous posterior fragment that external skeletal fixation has its widest application. Paired pins are inserted into the mandible anterior and posterior to the fracture line. The couplets are then connected across the fracture site by a firm bar. In using this technique we have not given the mandible free range during its entire healing period. During the first weeks when union is being established we have assisted the external fixation in its support of the fracture line by fixing the mandible to the maxilla by inter-maxillary wires.

A third major problem in mandibular fractures arises when there is considerable loss of substance of the bone and re-establishment of full continuity and alignment is not possible by simple means. This is the type of mandibular injury often seen in gun shot or shell fragment wounds. Large sections of the mandible are extensively comminuted and fragmented and pieces are displayed into the soft tissues of the floor of the mouth or even down into the soft tissues of the neck. When such injury occurs in the symphysis area and the fragments are of considerable size and driven posteriorly into the muscles of the tongue it is possible to retrieve them by direct traction on the fragments by means of small wire loops inserted through dental drill holes, and attached with elastics to an anterior bar replacing the former position of the mandible. This bar is supported in its place by cementing it firmly to the most anterior viable teeth on each side of the mandibular stumps. Rubber band traction applied over a period of several days will often draw forward the fragments with their muscular and periosteal attachments into a semblance of order in the anterior symphysis area. In the region of the horizontal ramus where this extensive comminution occurs from a penetrating type of wound, it is surprising how frequently the multiple fragments displaced a considerable distance from their proper location will, over a period of several days, due to the retraction of periosteal attachments and shreds which have extended out into the soft tissues with the bone fragments, replace themselves into their original alignment. It is generally impossible to restore these multiple fragments to their original position by manual traction and one must be extremely careful in handling the fragments that the single remaining periosteal attachment is not destroyed. Often only a single nutrient vessel traverses the attachment and means the difference between a live bone fragment and a squestrum. The portions of mandible on both sides of a large area of loss such as has just been described must both individually be supported in proper relation to the teeth of the maxillae. Fixation must be maintained for many months to give the periosteal shreds and the remaining bone fragments full opportunity to lay down new bone and make an abutment at each end of the fracture site. In dealing with areas of extensive mandibular loss, silver cap splints are made with a fine technique to completely crown the residual teeth of the mandible. These are cemented in place and thereafter give a firm means of attachment to all the types of bars and supports which may be required for fixation.

Injuries below the frontal bone and above the mandible are referred to in general as injuries of the middle third of the face. The bones comprising the middle third of the face include the maxillae, the nasal and malar bones, and the ethmoid bone. These bones have suture lines in common with the frontal bone. When injury causes fractures extending across this line, the case often becomes a neurosurgical problem also. Fracture of a single one of these bones often occurs in the simpler types of injury. The simple reposition of a single fractured bone of the middle third creates few problems. There are many acceptable techniques for each of them.

When the malar bone fractures, it usually does so at its articulations with the frontal, the maxilla, and the temporal bone and the crush is usually medialward into the maxillary sinus. Occasionally the bone itself is comminuted. For the simpler type of depressed malar fractures we have used the temporal method of reduction often known as the Gilles method. In it an elevator is introduced beneath the temporal fascia and downward beneath the zygomatic arch. This allows firm leverage on the bone for elevation.

An occasionally badly comminuted fracture of the malar bone requires intra-sinus elevation. An approach is usually made through the canine fossa. Support is given to the comminuted fragments by a firm pack placed in the maxillary sinus after elevation. This method compounds the fracture, however, and damages the maxillary sinus mucosa, and the pack must be left in place for several weeks thus exciting a fairly marked reaction in the cheek. It should not be used in the reduction of the simple type of malar fracture.

We have used this intra-sinus method of elevation in some fractures of the malar bone seen as late as six to eight weeks after injury. Since it is the nature of the malar bone to heal very rapidly, malposition becomes firm after but a few weeks. Therefore, when a badly depressed malar fracture with loss of orbital support is seen after several weeks it is more than likely that simple means of elevation will not suffice. One is faced with the problem of accepting a deformity for later correction by transplant methods of fascia, cartilage, or bone or of re-fracturing the malar bone and elevating it into position. The latter method of correcting the deformity is preferable when it can be applied. After refracturing and repositioning, the bone must be fixed in its proper position for a long period of time. Fixation to a headcap by external means is best. An external pin couplet is a very satisfactory means of fixation and allows control of the malar bone for any type of manipulation to adjust its fineness of position postoperatively.

The nasal bones, due to their prominent position are, perhaps, the most commonly fractured bones of the body. The fractures range all the way from simple malposition correctable by elevation and thumb pressure to cases of extreme comminution and depression with disruption of the entire ridge support of the nose. The latter type is often associated with maxillary and ethmoid labyrinth fractures and with extensive lacerations of the soft tissues. In these latter cases the interior of the nose should be carefully repaired with replacement of the turbinates into their normal position and suture of the mucosa of both the septal and the lateral walls of the nasal space in an edge to edge manner. The nasal septum should always be replaced in a midline position. The Asch forceps is a useful instrument for gripping the septum and rocking it into place. The function of the nose and the appearance of the face should be equally important objectives in the reparative process. When the nasal interior is agglutinated into a mass of adhesions and scar tissue it can later be redeemed as an airway only through extensive sacrifices of intra-nasal tissue.

It is difficult in cases of severe comminution of the nasal bones to maintain the dorsum in its normal, ridgelike position during healing and some external means must be used to effect it. Perhaps the simplest method is the use of through and through silk or steel wire sutures placed at the superior and the inferior limits of the nasal bones and tied on both sides over a fashioned lead plate. This prevents broad spread of the comminuted nasal bone fragments and gives a tenting effect to the ridge. A more complex but more effective external appliance is required in some instances. It operates by means of two curved bars descending from a headcap and terminating in wire hooks inserted upward high into each nasal space. These are tensed and locked to give proper forward traction.

The ethmoid labyrinth when it is bulged laterally into the orbital spaces must be compressed medialward into its normal position by deep pressure at the inner angle of both orbital spaces. Simultaneous elevation of the nasomaxillary bone mass helps narrow the ethmoid. When x-ray reveals spicules of ethmoidal or frontal bone turned in an intracranial direction, or when there is evidence of a cerebrospinal leak, the services of a neurosurgeon are requested. The facial injury becomes a secondary matter. The manipulation of the facial bones should be deferred until the dural opening is well sealed. If it seems advisable, the soft tissues of the face may be repaired under local anesthesia in the interim.

When the maxillae are fractured, the problem of dental occlusion again arises. In those instances where the mandible is not also fractured one borrows the mandible to use as both a splint and a positioning agent by applying intermaxillary wires to occlude the teeth of the maxillae to the mandible. Because of the weight of this combined mass, one must then support the whole lower face in order to keep it in normal relationship with the upper half of the face and head. There are many methods of attachment of the maxillary and mandibular mass to headcap supports to prevent sagging of the lower portion of the face. Here again the silver cap splint cemented to the teeth and attached to a plaster headcap with screw plates and bars lends itself to a satisfactory solution of the problem. Fine wires attached to the intermaxillary loops and run upward through the soft tissues of the cheek to a headcap bar can also be used to support the lower facial mass. The pull of such wires is entirely upward and if there is loss of bone substance in the middle third fracture a shortening of the vertical dimension of the face can result from this method. Vertical bar support which controls upward as well as downward movement is preferable in many cases. Rigid bars are applicable in this manner from a headcap appliance to the cap splints cemented to the teeth, or to an arch bar wired firmly to the teeth, or to external skeletal pin couplets inserted into the mandible.

Fractures of the bones of the middle third of the face tend in general to heal rapidly. Early and proper positioning therefore is imperative. Once healing in malposition has been effected it requires a major procedure to correct the deformity. Occlusion may be restored only by the sacrifice and grinding of teeth, and the use of cartilage or bone implant may be necessary to correct the contours of the face. Attention should be given to the facial injury as soon as the patient's general and neurologic condition permits. Improper healing in this area can result in gross malformations as well as in disabling malfunctions of the nasal and dental apparatus.

In the majority of fractures of the facial bones manual traction is adequate for replacement of the fragments. It is not uncommon, however, in fractures of the malar, the maxilla, or the mandible that application of average strength to the manual reduction is not adequate to restore the alignment of the parts. The use of steady traction is as useful in facial fractures as it is in fractures of bones of the other parts of the body. Elastic traction over hooks wired to the teeth and extending from upper teeth to lower teeth is frequently employed in reduction of mandibular and maxillary fractures. A severely impacted fracture of the malar bone can also be replaced by gradual rubber traction to a headcap appliance. In some very late impacted fractures of the malar or maxilla, however, elastic traction to a headcap is not adequate. There is a limit to the amount of pull which can be exerted from a headcap apparatus. When one has no success after twenty-four or forty-eight hours, other traction means must be resorted to. By means of perforating wires inserted into the infra-orbital rims or into the alveolar process of the maxilla or by means of couplet pins inserted into the body of the malar bone one can get a firm grip upon the structure which will withstand any ordinary pull over a long period of time. It is a simple matter then to construct a bed frame with pulleys and to attach a weight traction of several pounds to the wire loops or pin couplets. The head is braced into position with sand bags and one has all the necessary latitude in the direction and in the strength of pull. Most impacted fractures and those united in malposition beyond any other means of reduction will give with this kind of pull. Once the bone is restored to normal position it will either maintain itself there freely or it can be maintained by support to the headcap. The metal cap splint cemented firmly to the upper teeth lends itself admirably to this type of traction for disimpaction of the maxilla.

The soft tissue portion of the facial injury is often more readily repaired than is the injury to the skeletal parts. It is preferable to make the primary repair a meticulous and thorough procedure. To this end, it is best to cover the injury with sterile dressings until the patient is resuscitated and his airway established. He can then be transported to the place where his complete facial repair can be done.

The wound should be cleansed with saline irrigations and all the debris removed manually. In the face the soft tissue debridement can be done very conservatively because of the fine blood supply. Flaps and pedicled parts which in other portions of the body must inevitably be lost will often maintain their viability in the face. All completely free fragments of bone should be removed from the depts of the wound before the soft tissues are joined. Those fragments of bone which have even small attachements to the periosteum will usually remain viable and take part in the general skeletal healing if postoperative infection is avoided. Foreign bodies should be removed from the depths of the wound.

In uniting the soft tissues the buried suture should be held to the minimum requisite with maintaining the position of the flaps. Fine skin suture should be used for the skin edges and tension on these sutures should be avoided. They should usually be removed in three days. With careful hemostasis, drains are rarely needed and often are ill advised. In handling the soft tissue flaps the use of forceps should be avoided as much as possible. It is preferable to handle the flaps with the fingers or gauze. A great deal of tissue can be bruised in a long reparative procedure through the pinching of thumb forceps. When venous congestion and edema of the injured parts occurs postoperatively, the tissues tend to distort, healing is delayed, and a fine culture medium for postoperative infection is present. It is best combated by application of a pressure dressing to the postoperative wound. Healing is accelerated by the prevention of edema. When external fixation appliances are attached to the face, the application of a pressure bandage is extremely difficult, and it is not possible to wind an elastic bandage about the face. However, in circumstances such as this adequate pressure can be maintained by fashioning a portion of a rubber glove with vents and slits for the external appliances and with strings or straps extending posteriorly to tie behind the head. When large pedicled flaps of soft tissue have been formed by the wound the prevention of edema may make the difference between maintaining the viability of these flaps or losing the flaps through inadequate circulation.

The face is a sort of surgical paradise. It tends rarely to become infected. Infection can be a catastrophe, however. To prevent postoperative infection several points must be stressed. First, is the assured removal of all irritating foreign bodies whether they be completely separated fragments of bone, fragments of clothing, fragments of rock and earth, or of other material. The second important factor is the fixation of all movable fractured parts. A continued breaking down of fresh, new granulation tissue about fractured bone ends favors infection. The prevention of postoperative edema robs potential bacterial invaders of their favorite growth medium. When the wounds extend intra-orally as do so many of the facial wounds, mouth hygiene is of importance. All intraoral lacerations should be sutured with meticulous care. Mouth organisms can and usually do cause a very foul type of suppurating wound unless controlled. Normal saline is a most effective and non-irritating cleansing solution for use in the mouth. It should be used frequently throughout the day. The cleansing is followed with a light dusting of all intra-oral lacerations with a combination of penicillin and sulfanilamide powder. Severely wounded patients are given a routine post-injury medication of penicillin and oral sulfadiazine. In moderately severe wounds penicillin alone is often used. Penicillin solution is trickled into the lines of laceration after all reparative procedures. It is very desirable in all badly comminuted fractures that absolutely no infection supervene because the viability of a great number of small bone fragments depends upon just one nutrient vessel extending through its shred of periosteal attachment. Loss of this vessel means loss of the fragment of bone and in many extensive injuries loss of but a very few fragments of bone results in non-union.

Anesthetic choice is not easy in some types of face and jaw injuries. Some soft tissue work and some skeletal repair such as mandibular realignment can be done with local anesthesia or with morphine premedication. More extensive injuries require general anesthetic. This is particularly true when the wound extends into the airway and considerable bleeding is bound to occur during the surgical procedure. In such circumstances it is obvious that the airway must be occluded and intratracheal anesthesia either through the nasal or oral routes is preferable. When a tracheotomy tube is in place, most of the anesthetic problem is solved. We frequently use a combination of intravenous pentothal and inhalation nitrous oxide and oxygen. When working in or near the larynx, superficial application of a dilute cocaine solution combined with this anesthesia circumvents the laryngeal reflex.

The postoperative care of facial injuries is as important as the reparative procedure. It is important to maintain a clear airway and a dry lower respiratory tree. Since anesthesia need not be deep the patients awaken early after surgery and are encouraged immediately to cough and hyper-ventilate. The head is elevated as early as is possible to circumvent edema of the facial structures. This puts an added load upon the cilia in emptying the tracheobronchial tree, but

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THE Rh FACTOR

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Brief Review

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The Rh factor is, at the moment, one of the most discussed medical subjects appearing in the current medical literature. It is, perhaps, one of the most important discoveries of the present decade. Therefore, a brief review of the subject, and the presentation of a summary of the autopsied and recovered cases which came under my observation seem timely.

For many years there had existed in the minds of the investigators a growing suspicion, bordering on a conviction, that one of the major causes of fetal and maternal morbidity might, somehow, be linked with an incompatibility between the blood of the mother and that of the fetus, and a resulting antigen-antibody reaction. More recently, a few attempted to explain the pathogenesis of erythroblastosis fetalis on the same basis. Simultaneously, reports had appeared of the unexplained intragroup hemolytic reactions occurring in individuals who had received repeated transfusions, and in mothers who had given birth to erythroblastotic or macerated babies. In some of these cases, the presence of an agglutinin, which was thought to be responsible for the reaction, was actually demonstrated.

In 1940 came the announcement of the epochal discovery by Laudsteiner and Wiener of the Rh factor in blood, a Mendelian dominant, in about 85 per cent of human beings, which is capable of producing immunization in the remaining 15 per cent of individuals. Wiener was now able to explain the cause of the severe hemolytic reactions which occurred in patients who had received transfusions of homologous blood. Later in the same year, Levine and his co-workers published an observation that the sera of women who had had repeated miscarriages or abortions contained agglutinins shown to be related to the Rh factor. The following year, Levine, Katzin and Burnham published, in the *Journal of the American Medical Association*, an article entitled, "Iso-immunization in Pregnancy: Its Possible Bearing on the Etiology of Erythroblastosis Fetalis." This paper and several others which closely followed clearly established their theory that the genesis of erythroblastosis fetalis in a great majority of instances is related to the immunologic reaction due to the Rh factor between the mother and the baby. In spite of the importance of this discovery in clinical medicine, the medical profession in general was, at first, slow to grasp its significance. The clinical laboratory, too, was not immediately awakened to the importance of Rh determination in clinical medicine. The obstetricians and the pediatricians became more and more interested in the subject, only as they came in contact with clinical cases of their own, in which the Rh factor played a role. Only in recent months the interest of the physicians in general seems at last to have become more universal.

Today, thanks to the diligent and fundamental investigations of such men as Wiener, Levine, Diamond, Davidsohn and others, we have come to undertsand a great deal more about the Rh factor. At the same time, we have also come to realize that the subject has been, in a way, made so complex and complicated by the very same men who have been publishing new data as they come into their possession, sometimes too prematurely, that the rest of the medical profession has been left too bewildered to grasp the important theoretical and technical considerations which form the basis of the clear understanding of the subject.

The determination of the Rh factor and its related sub-types, the laboratory diagnosis of erythroblastosis fetalis and of the intragroup hemolytic reaction, therefore, constitute a complicated immunologic problem and their proper interpretation requires the understanding of genetics. The average clinical laboratory is neither equipped nor staffed to render complete immunologic service or genetic interpretation of the sub-

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ject which is yet undergoing further exploration by the fundamental investigators.

Fortunately, however, a few important practical observations along with the original basic discoveries can be and are being made which apply to everyday practice with satisfactory results and a degree of assurance. I shall discuss the laboratory phases of this complicated subject in a form of questions and answers, in so doing, purposely avoiding the use of genetic terms for the sake of simplicity.

1. What is the Rh factor? The name was coined by Wiener and Laudsteiner, the discoverers, and derived from the first two letters of rhesus monkey, whose blood was injected into rabbits to produce an anti-rhesus serum, which was found by them to cause agglutination of the blood of about 85 per cent of white individuals. The blood of these 85 per cent of people is known as Rh positive, because the anti-Rh serum causes its agglutination, while the blood of the remaining 15 per cent is known as Rh negative and is not agglutinated by the anti-Rh serum. The Rh positive is a Mendelian dominant while the Rh negative is a recessive.

2. What is the one most important basic question involved in this entire subject? The immunization of the Rh negative person by the blood of the Rh positive individual with resulting antigen-antibody reactions which may occur actively or passively, depending upon how the victim is sensitized.

3. What, then, makes the subject so complicated? Whereas, in the beginning, there was only one anti-Rh serum for the determination of the Rh factor, we now have three types of anti-Rh agglutinins, namely, anti-Rh$_0$, anti-Rh′, anti-Rh″, with occurrence of the last two, separately and in association with the first, giving rise to two additional anti-Rh serums, anti-Rh$_0$ + anti-Rh′ or anti-Rh$_0$′ and anti-Rh$_0$ + anti-Rh″ or anti-Rh$_0$″. Thus, we now have five major varieties of anti-Rh serums and their corresponding Rh factors instead of only one, and these five Rh factors give rise to eight types of human blood. Therefore, to make the complete Rh factor determination, we should have the three anti-Rh serums mentioned. However, they are not as yet available for routine use. The testing serum we now use contains anti-Rh$_0$ and anti-Rh′ agglutinins which gives about 87 per cent positive reactions on the bloods of the white individuals in New York City. Then we have the tedious procedure of titration for anti-Rh agglutinins, and the problem of dealing with the so-called "blocking antibodies" which interfere with the titration. We are also confronted with Hr factor, with whose nature we are not as yet quite familiar.

All of the procedures are complicated and exacting, requiring the attention of an expert technician, specially trained to do the job.

4. Briefly, what is the mechanism whereby the baby develops erythroblastosis fetalis? In 90 to 95 per cent of the cases, the father is Rh positive and the fetus is also Rh positive while the mother is Rh negative. The Rh positive blood of the fetus enters the Rh negative mother's circulation through the placenta and in time, causes in the mother the production of strong anti-Rh agglutinins. These agglutinins, in turn, enter the fetal circulation and cause a true hemolytic anemia through the destruction of the fetal blood and stimulate extra-medullary erythropoiesis. (See question 7.)

5. Are all Rh negative individuals easily sensitized by the Rh positive blood? No, only one in twenty-five to fifty are readily sensitized. Others may require several or many transfusions or pregnancies to become sensitized. The incidence of frank cases of erythroblastosis fetalis is, therefore, much smaller than generally anticipated, theoretically estimated to be one in from 200 to 350 pregnancies. Actual figures are still smaller. Levine estimated about 0.1 to 0.2 per cent of all pregnancies.

6. Can Rh negative mothers continue to have normal babies? The first child is expected to be normal provided the mother has had no transfusions with Rh positive blood before becoming pregnant. Several subsequent babies may be normal, depending partly upon how sensitive the mother happens to be and partly upon some yet unknown factors. Such mothers may have a normal baby again if the intervals between the pregnancies are long enough, that is, three to five years or longer, to let the anti-Rh agglutinins from previous pregnancies disappear. (This may be a theoretical wishful thinking, especially where the father happens to be homogygous Rh positive.) A normal Rh negative baby may be born of a sensitized mother, provided the father happens to be heterozygous Rh positive, in which case he has a 50 per cent chance of having normal Rh negative babies. The father may be considered

heterozygous if any of his blood relatives, namely, any one of the parents, brothers, sisters or children, should happen to be Rh negative. (It is also stated that the father is homozygous if his cells are agglutinated by Rh', Rh_o anti-sera and by anti-Hr serum.)

7. May an Rh positive mother have an erythroblastotic baby? Yes, approximately 5 to 10 per cent of the mothers who have given birth to babies with erythroblastosis fetalis have been found to be Rh positive. This can be best explained, in most instances, as due to the presence of some of the sub-types of the Rh factor in the mother while other sub-types are present in the blood of the husband and in the blood of the fetus. In other instances the group A or B blood may act in the identical manner as the Rh factor in the baby's blood and cause the production of anti-A or anti-B agglutinins of sufficiently high titres in the group O mother to cause the disease. Some cases are also probably due to the Hr factor incompatibility. That is, in a few cases of Rh positive mothers of erythroblastotic babies, the agglutinins were found which reacted with all Rh negative persons and with some Rh positive persons. The Rh positive persons that reacted with this blood were heterozygous Rh positive, having an Rh negative recessive factor.

8. Can the presence of the anti-Rh agglutinins be demonstrated in every case? No, the titre may not be strong enough to be demonstrable. Occasionally, the "blocking antibodies" or the inhibitory substance in the serum to be tested may partially combine with the test Rh positive cells to neutralize the reaction. The technique has now been developed to eliminate this interference so that the titre of the anti-Rh agglutinins may be determined.

9. What are the "blocking antibodies"? They are the special Rh antibodies, incomplete antibodies, found in the sensitized maternal blood (along with the anti-Rh agglutinins) which combine with Rh positive cells, without causing agglutination, thus "blocking" or inhibiting the agglutination of the cells by the anti-Rh agglutinins. They are also known as the inhibitory substance.

10. Can the presence of the blocking antibodies be demonstrated? Yes, on the titration of the anti-Rh agglutinins, if agglutination of the testing cells occurs not in lower dilutions but only in higher dilutions, the presence of the blocking antibodies is suspected. Either the simple slide test of Diamond or the more complicated conglutination test of Wiener is employed to demonstrate them.

11. What is the Hr factor? It is difficult to define it because not enough is known about it. The symbol Hr represents the factor which is opposite to Rh because it is present in Rh negative blood. The Hr antibody clumps the blood from all Rh negative and heterozygous Rh positive persons. The failure of an Rh positive blood to be clumped by it indicates that it belongs to a homozygous Rh positive person. (This is still disputed by some authorities.)

12. Does the high titre of the anti-Rh agglutinins mean a bad sign for the unborn baby? Usually, yes, but not necessarily. The anti-Rh agglutinins may be carried over from previous pregnancies, apparently, with little effect on the unborn baby if it happens to be Rh negative.

13. Is early induction of labor or a cesarean section indicated in every case of mothers who have previously given birth to an erythroblastotic baby or babies or who are merely Rh negative? No. The Rh negative mothers who have had no history of miscarriage or of having been pregnant previously, should be left alone; only the development or rise in the anti-agglutinin titre should be watched. Even those mothers who have the history of having given birth to erythroblastotic babies or having had miscarriages or abortions, should better not be subjected to the risk of a cesarean section promiscuously. The insult of prematurity is usually a little bit too much for the babies already affected by erythroblastosis. If the titre of the anti-agglutinins should suddenly and sharply rise or fall toward the end of pregnancy, some investigators advocate a cesarean section. However, the low titre does not necessarily mean a mild form of erythroblastosis. A sudden drop in titre toward the end of pregnancy may mean hydrops of the severest form.

14. What would be the first step in treating a newborn erythroblastotic baby? The first step would be to do a blood count. If the count shows 3,500,000 of erythrocytes or higher, immediate transfusion is not necessary. Watch the count at frequent intervals. At the same time, have a Type O, Rh negative donor ready, if possible. Give Type O, Rh negative blood, approximately 10 c.c. per pound body weight, intravenously, and if urgently indicated, possibly through the umbilical vein. If an Rh negative donor is not available,

TABLE I. ERYTHROBLASTOSIS FETALIS

Icterus Gravis

No.	42–1600	42–1657	43–98	43–2060	44–2180	45–78	45–381	Average
Term	prem	full	full	prem	full	prem	full	4f-3pm
Sex	F	M	F	M	M	F	M	4M-3F
Age	2 days	2 days	6 hrs.	13 hrs.	2 days	12 hrs.	3 days	34 hrs.
Weight	2,500	3,970	2,500	2,100	3,600	2,150	2,700	2,791
Rh	pos.	pos.	pos.	pos.			pos.	pos.
Liver	120 Gm.	220	205	100	110	132	129	145 (118.5)*
Spleen	24	43	22	21	30	28	18	26 (8.2)*
Ext. med. erythrop.	yes	yes	yes	yes	yes	yes	yes	yes

*Normal average weight

Data on Mothers

Age	29	29	35	35†	36	28	29	31
Grav.	III	II	II	III	V	V	IV	III
Children living	2	0	1	0	4	2	3	2
Dead	2	3	1	3	1	3	1	2
	1-2d-IG 1-mis-4m	1-sb-tox. 1-2d-IG i-sb-hyd	1-6h-IG	1-mis-6w. 1-sb-IG 1-13h-IG	1-2d-IG	1-sb-IG 1-sb-6m 1-12h-IG	1-1d-IG	
Rh	neg.	neg.	neg.	neg.	pos.	neg.	neg.	6 neg. 1 pos.

†Wassermann—positive

the mother's blood may be given. Such blood should be citrated, washed twice in saline and given resuspended, preferably in compatible plasma, or in concentrated form. In mild cases, one such transfusion is usually sufficient. The sooner the transfusion of Rh negative blood is given, the more effective is the treatment. Then, the mother's milk should not be fed the baby. The antibodies have been demonstrated in the mother's milk. The baby should be kept in an oxygen tent. If Rh negative donors are not available, compatible Rh positive blood may have to be given as an emergency measure. While Rh negative blood is said to survive for periods up to three months in the baby, Rh positive blood is known to be eliminated within four to five days. This is due to the demonstrated fact that the mother's anti-Rh agglutinins are present in the baby's circulation as long as twelve to fourteen days after birth. The essence of the treatment is, therefore, to keep up the oxygen supply to combat anoxemia. Plasma and glucose can be safely given as well as oxygen.

15. In what other conditions does the Rh factor play a vital role? In all cases of blood transfusion, the determination of the Rh factor has become as important as the routine typing and cross-matching of bloods of the recipient and the donors. This is imperative, especially when repeated transfusions are to be given to one recipient. Should he be Rh negative and the donors positive, precisely the same situation occurs as in pregnancy with the stimulation of anti-Rh agglutinins and a resulting hemolytic reaction in the recipient.

I wish now briefly to present a few pertinent data from the cases of erythroblastosis fetalis in which autopsy was performed.

Tables I and II give the summary of the findings in the thirteen cases of erythroblastosis, seven in the icterus gravis type, four of the hydrops type and two macerated babies. I wish to particularly call your attention to the last column of each group which gives the average figures. Your attention is directed to the following observations. Prematurity appears to be common, thus adding to the risk of the baby. The hydrops babies were born dead, or lived for one hour or less, while the icterus cases lived for an average duration of 34 hours; proper and adequate treatment might have saved some of these babies. The Rh factor was positive in all the babies tested. The liver was definitely enlarged, an average weight of 145 grams against the normal weight of 118.5 grams in the icterus series, and 191

TABLE II. ERYTHROBLASTOSIS FETALIS

	Hydrops					Macerated	
No.	37-441	40-2323	42-1178	44-992	Average	44-1519	45-1849
Term	full	prem.	full	prem.	2f-2pm	full	full
Sex	M	F	F	M	2M-2F	F	M
Age	1 hr.	sb	23 min.	sb	40m-2sb	sb	sb
Weight	4,100	1,800	2,500	2,950	2,855	3,500	3,250
Rh			pos.				
Liver	340	77	128	220	191 (129)*	165	112
Spleen	135†	12	10	40	49-21 (8.8)*	12	42
Ext. med. erythrop.	yes	yes	yes	yes	yes		

*Average normal weight
†This spleen was ruptured

Data on Mothers

Age	44	30	35	29	34	24	30
Grav.	III	VI	VIII	IX	VI	V	IV
Children living	0	5	3	4	3	3	1
Dead	3	1	6	5	3.7	2	2
	1-10d 1-sb-IG 1-1h-HY	1-sb-HY	1-sb-8m 1-12h-IG 1-4m-IG 1-4w-IG 1-23mi-HY 1-hyst-3m	4-sb-Mac 1-sb-HY		2-sb-Mac	2-mis 1-sb-Mac
Rh		neg.	neg.	neg.	neg.	neg.	neg.
Placenta	4 lbs.	3 times	2.5 lbs.				

grams against 129 grams in the hydrops group. The enlargement of the spleen is most striking in most of the cases. In the hydrops group an average weight of the spleen was 49 grams (including the one of extraordinary size, 135 grams, exclusive of which, the weight was 21 grams) against the normal of 8.8 grams. For the icterus group, the weight was 26 grams against the normal of 8.2 grams. Extramedullary erythropoiesis was observed in all or most of the visceral organs in varying degrees. Iron pigments were demonstrated in the liver, whenever stained for them. The brains were not examined for kernicterus.

Maternal histories revealed the following: The Rh factor on eleven mothers was negative, one positive, and one undetermined. Of the thirty-four dead babies of the thirteen mothers, five were hydrops (two stillborn), seven macerated (four by the same mother), three premature stillborn (no reference made as to erythroblastosis), one stillborn with toxemia, one unknown, one hysterotomy at fourth month, and four miscarriages. One of the women, thirty-five years of age, had four babies with icterus gravis and one hydrops and one stillbirth at the eighth month. Two of the five hydrops babies were delivered by a cesarean section. The mother of one of these two babies showed a low anti-Rh agglutinin titre and blocking antibodies, and a cesarean section was performed with a hope of saving the baby. The baby only gasped for breath and expired. One of the icterus babies had a syphilitic mother. The roentgen diagnosis of the baby's long bones was given as possibly syphilitic. The differential diagnosis was difficult. However, the microscopic findings of the visceral organs were those of erythroblastosis fetalis.

The first baby recorded here which came to autopsy in February, 1937, will be reported more fully. I believe this is the first case of erythroblastosis fetalis recorded in the Department of Pathology of the University of Minnesota. The baby was delivered of a multipara, aged forty-four, who had two previous pregnancies, one dying at the age of ten days, and the other a stillborn with icterus, and who had been given anti-syphilitic treatment because of jaundice and death of the second baby, although her Wassermann was negative. The present baby showed a moderate degree of jaundice and a universal edema of the body with a marked distention of the abdomen which was first thought to be due to the distended urinary bladder. When catherization failed, the abdomen was tapped, which revealed free blood in the cavity. At autopsy, the peritoneal cavity was filled with blood which had originated from a ruptured spleen weighting 135 grams. In this case, too, the question of congenital syphilis was at first entertained. Several of the mothers were suspected of having or actually had a hydramnios, and the placenta was swollen and heavy, weighing two to four times the normal weight.

Since 1939, we have recorded in this hospital approximately fifteen clinical cases of erythroblastosis fetalis of the icterus gravis type with complete recovery. Actually, I suspect that there must have been an equal number of undiagnosed cases, particularly among the stillborn who did not come to autopsy and whose mother's Rh was not determined. Several severe cases were encountered. Baby S. had 139,000 nucleated cells per cubic millimeter at birth (104,000 erythroblasts and 35,000 cells of the myeloid series) in June, 1939, and developed the most intense and sustained jaundice for more than five weeks. He developed a few petechiae, was lethagic and cyanotic. His hemoglobin dropped from 82 per cent to 30 per cent within a week. During the first eight days, four intramuscular injections of 28 to 35 c.c. of blood were given without appreciable improvement. On the ninth day, 100 c.c. of blood was transfused. The hemoglobin began to rise gradually up to 53 per cent on the twenty-fifth day. He was discharged on the thirty-second day, still somewhat jaundiced and anemic. Today, at the age of six, the baby appears normal and healthy. Baby G. was delivered by a cesarean section prematurely in November, 1940. It was sluggish and soon developed a deep jaundice. There were 48,000 nucleated cells per cubic millimeter. The hemoglobin was 48 per cent which gradually fell to 39 per cent, in spite of two intramuscular injections of 15 and 10 c.c. of blood and two injections of 20 c.c. plasma during the first week. A transfusion of 100 c.c. of citrated blood was then given, and the hemoglobin rose immediately to 80 per cent but slowly came down to 43 per cent on the twenty-sixth day. A second transfusion of 100 c.c. of citrated blood caused immediate rise of the hemoglobin to 89 per cent, where it remained until discharge. Samples of blood from the baby and the parents were sent to Dr. Wiener, who reported the mother to be Rh negative and the father and the child Rh positive. No diagnostic serum was available at the time and the Rh factor of the blood transfused was not determined.

I may briefly cite three illustrative cases in which a determination of the Rh factor was of utmost importance.

Mrs. N. gave birth to a hydrops and lost a considerable amount of blood. This was in the days when the importance of the Rh factor was not universally appreciated and no facilities were available for obtaining Rh negative donors. The clinician immediately ordered a transfusion which was done with the result the patient developed an anuria and elevated blood urea nitrogen.

In 1938, Miss X. was a patient at the age of eighteen with a diagnosis of encephalitis. She received four blood transfusions during her confinement in the hospital. She had since been married. Her first child died of erythroblastosis. She was found to be Rh negative.

Mrs. P. was admitted because of bleeding peptic ulcer. Her hemoglobin was 45 per cent. The usual blood groupings and cross-matchings were done, and the patient was receiving a transfusion of compatible blood. She developed a severe reaction before 100 c.c. of the blood had been administered. Regroupings and recross-matchings proved no error on the part of the laboratory. Then, Rh determination was ordered. This showed the answer. The patient was Rh negative.

In conclusion, I wish to recommend the following procedure:

Routine determination of the Rh factor in all hospital admissions may not be practical. However, in the light of our present knowledge and experience with the Rh factor and the intragroup transfusion reaction, it is recommended that the following procedure be followed, in order to prevent the transfusion reactions in which the Rh factor is found to play a decisive role.

1. All patients who come under the following category should have their Rh factor determined along with the usual blood grouping and cross matching, before the transfusion:

(a) All women who give a history of having been pregnant.

(b) All women who give a history of having had one or more miscarriages or abortions, or having had a baby or babies who had jaundice or died soon after birth.

(c) All patients who give a history of having reecived one or more transfusions, regardless of whether they had any reaction or not.

2. Every gynecological and obstetrical patient should have her Rh factor determined. If the factor be negative, it would be desirable to have her husband's and children's bloods tested for the Rh factor.

Clinical Discussion

E. M. Kasper, M.D.

Erythroblastosis fetalis is a term which personally I do not like. Hemolytic anemia of the newborn is preferable. My opinion is that hydrops fetalis is the most severe form, and then in decreasing grades come icterus gravis and congenital anemia of the newborn. I think they are all one and the same disease. Luckily we do not run into them very often, probably in only about 0.2 of one per cent of all births. This figure needs an explanation because, after all, 15 per cent of the mothers are Rh negative, and we wonder why we do not run into it more frequently. Individual variations in the permeability of the placenta may explain some of them. Also, there must be more than one pregnancy, as a rule, to produce an erythroblastosis. The modern tendency to restrict the number of children in the family is therefore a large factor in keeping down the number of erythroblastotic babies. Another explanation is that very often the condition escapes recognition. Some of these erythroblastotic babies are born with a mild anemia which, in the past, has not been attributed to the Rh factor. We also know that many husbands are heterozygous; that is, they have both the Rh positive and the Rh negative genes. In that event, some of the babies may be normal. It is interesting to calculate on the frequency of such marriages. Probably not over 5.5 per cent of all marriages are between men who are homozygous and women who are Rh negative, so the frequency would be cut down considerably just by that alone. Among American negroes and American-born Chinese, the incidence of the positive Rh factor is much higher. In the Chinese, the incidence of the Rh negative is said to be less than 1 per cent against 15 per cent among the white population. Many more male children are affected than female children. Another interesting point is in the recent work that some men are doing on feeble-mindedness. It was shown definitely from their study that there is some relationship between feeble-mindedness and this condition.

With hydrops fetalis, we have an obstetrical problem in which we often treat the mother for toxemia without really knowing the cause of it. There are a number of cases of hydramnios. The deliveries are very difficult, and the percentage of breech is increased, as are the other forms of abnormal presentation. Practically all babies die. With icterus gravis, on the other hand, we usually do not have very much of an obstetrical problem, because here the baby is not usually large and does not show any abnormality, except that it may be born jaundiced. The mortality among these babies was up around 75 per cent. It has dropped down now to about 15 per cent with the proper treatment. With congenital anemias of the newborn we do not have very much of an increase in obstetrical difficulty.

Regarding treatment, it is not clear just what we can do. We can say that the transfusions of Rh negative women with Rh negative blood should always be done. We have to be sure, however, that we do not use Rh negative donors who have been previously transfused with Rh positive blood, because they may transfer the anti-Rh agglutinins to the recipient. The transfusion of an erythroblastotic infant with Rh negative blood of the same group should also be done, if possible. Some men, on the other hand, claim that it is better to use Rh positive blood even though that blood is rapidly destroyed in the baby's circulation. The point raised by these men is that the Rh positive blood will neutralize some of the anti-Rh agglutinins in the fetal blood stream. Some men advocate using Rh negative and Rh positive blood alternately. We should never use the mother's blood, unless the cells are washed in saline before administration. The importance in treatment is to treat early and not to wait until the advanced symptoms are developed. The hospital should keep a list of Rh negative donors, and where we suspect the baby is going to be born

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Dr. Kasper's paper has been somewhat shortened and the report of his cases is entirely omitted.

affected, we should have a donor ready. There has also been considerable discussion as to whether we should do cesarean sections on these mothers. I am not particularly sold on this idea, except in selected cases. The important thing in these cases is to watch the titer after the seventh month. Often we find that the titer does not rise at all; sometimes the titer will be rather high and all of a sudden it will drop; sometimes the titer will suddenly rise. There is no consistency. The only thing is to remember that when the titer does start rising, or if the titer does start falling, we have an indication of some trouble. When the titer falls, it means that the anti-Rh agglutinins are taken out of the mother's blood into the fetal blood, and these babies are apt to be hydrops.

The Rh tests are much more important during pregnancy than the Wassermann. I have found that, in over a thousand women, I did not find a single case of positive Wassermann where I had not suspected it before, or the mother knew it. With the Rh test, the percentage of the negative is much higher. I think the secret lies in trying to find some foreign material that is going to wipe out the anti-Rh agglutinins, but as yet we have not been able to find such a substance. It is important to tell Rh negative mothers with Rh positive husbands, that it is advisable not to have children too closely together, the consensus is about once every five years. That is in order to let the titer fall down in the mother's blood stream after pregnancy and to return to normal. The Rh negative mother should not nurse her Rh positive child. This condition is very interesting to the obstetrician, and as yet we do not have the answer. We hope that sometime or another we can show these mothers who are Rh negative and have Rh positive husbands that they can have a normal, living baby. The answer is not here today.

Differential Diagnoses—Kernicterus

Robert Rosenthal, M.D.

So much has been said about erythroblastosis that I think it is time we say something about the cases that are not. Therefore, I want to say something about the differential diagnosis. There are various conditions that look very much like erythroblastosis. First, common icterus neonatorum, simple physiological icterus, at times is very pronounced, particularly in the premature infant. It can be very pronounced and can appear very early, during the first day, and that is usually a characteristic of erythroblastosis. The premature infant, too, with icterus neonatorum may have more normoblasts than we usually find; i.e., over 5,000 per cu. mm. but if the number is considerably higher, the case should be viewed with suspicion. Usually we find also that when the number of erythroblasts have reached its maximum, it should return to normal without any particular treatment within a day or two, and there is usually no anemia in the first few days. Secondly, congenital lues can very easily simulate erythroblastosis fetalis. There may be icterus, splenomegoly, hepatomegaly, anemia, and a large number of circulating erythroblasts. Of course, the mother's Wassermann is extremely important because in the infant only a positive Wassermann can be depended upon. Dr. Ikeda mentioned something about the x-ray picture. That is very important because the x-ray pictures in erythroblastosis fetalis are just beginning to be studied and the changes are sometimes somewhat similar to those of congenital lues. Then, severe infections and particularly sepsis may produce a very severe icterus, enlarged liver, enlarged spleen, and often an increase of erythroblasts that appears several days after birth and usually appears after the onset of infection. Very often the focus of infection can be discovered. The septic temperature and the positive blood cultures help to clear up the diagnosis. Now, in the cases of congenital atresia of the bile duct, we have a very pronounced icterus, but usually there is no particular increase of the erythroblasts, though this can occasionally happen. The acholic stools are, of course, most important in differentiating this condition. Icterus usually appears a little later in the newborn period, but it may come at once. Then there is the large group of intracranial hemorrhage. That may at times simulate erythroblastosis fetalis, but the blood picture, the liver, and the spleen usually remain normal. Another condition, hemorrhagic disease of the newborn, may occur at about the same time as erythroblastosis fetalis. It may have a full-grown picture on the second or third day of life, and hemorrhages may occur in erythroblastosis fetalis, though here the hemorrhages are usually of a terminal nature. It should be kept in mind, too, that erythroblastosis fetalis also shows a diminished prothrombin. Congenital heart disease can be confused with erythroblastosis. Edema may be present, and the liver and the spleen may be large. The erythroblasts may reach as much as 25,000 per cu. mm. on the first day. The differential diagnosis may be particularly difficult if there is an early physiological icterus. I think that during the past year, it has been shown that idiopathic cardiac enlargement is found fairly often in erythroblastosis; but in congenital heart disease, there is usually no family history, no hemolysis and no anemia. On the other hand, there is an increased hemoglobin and increased red blood count. Of course, the determination of the Rh factors of the parents of the patient are extremely important. I do not want to say any more about some types of congenital icterus that are very rare and are not of erythroblastotic origin.

I would like to comment on one of the symptoms of erythroblastosis fetalis, the so-called kernicterus. We have adopted the German name. We usually call it icterus of the basal ganglia. This condition was first described seventy-five years ago, but did not receive its name until 1903. It has been shown that there are certain portions of the brain, particularly the basal ganglia, the cornu ammonis, even certain parts of the spinal cord, occasionally become stained with bile. It is a very rare condition. In one very early series of 120 cases of severe icterus gravis only six cases show kernicterus. The interesting point is that kernicterus appears only in the newborn period, never in the adult. It never appears in an obstructive type of jaundice. It apparently appears only in cases of erythroblastosis fetalis. It is not a disease in itself. It is just one of the lesions found in these cases of severe jaundice. The cause has not been definitely determined but the one thing that we have learned is that apparently only abnormal cells, the cells that have become damaged, degenerated, or necrotic will be stained with the bile. Now, it seems that the damage of these cells has to take place before the staining takes place. The anoxemia comes in here. Children fairly often are born asphyxiated and these stained cells, these stained basal ganglia, are very sensitive to anoxemia. They are damaged very early. It was shown, too, about fifteen years ago, that these particular areas like the cornu ammonis have a particularly poor blood supply and therefore are particularly easily damaged by anoxemia. At present, the best hypothesis is that these ganglia are very susceptible to damage by anoxemia, and the staining with bile is secondary, but this hypothesis does not explain the almost 100 per cent association of kernicterus in erythroblastosis fetalis and its consistent absence in other conditions. Thus, a new hypothesis has come up claiming that apparently the anti-Rh agglutinins act with a specific toxin on those cells, the antigen sensitizes them, and then they become bile stained. The histologic picture is the demyelinization and degeneration of the nerve cells, and we designate its characters not on its pathologic picture but on the clinical picture. We may have early symptoms of lethargy, convulsions, twitchings, but very often the symptoms are not found until late. It may take weeks or months before the symptoms appear. The late symptoms are various kinds of apathy, choreiform movements, delayed static functions. Practically every case shows mental retardation. There may be varied degrees of spasticity. It is one of the conditions that we have not paid very much attention to, but we will have to consider it in any case of icterus gravis combined with erythroblastosis. There is one case on record, where a child died at the age of three years, a child who had had erythroblastosis and icterus gravis and was extremely icteric and showed the typical symptoms of kernicterus, but when he was autopsied, degeneration of the various areas was found, but no staining was found. These are to be found exclusively in cases of erythroblastosis.

General Discussion

Dr. N. J. Lilleberg: Originally, the Rh factor was of interest only to obstetricians and pediatricians, but now it becomes apparent that any Rh negative woman who is given blood either intravenously or intramuscularly is liable to become sensitized before her obstetrical careers begin. Levine has shown in a large series of cases that Rh negative women who had, in their first pregnancies, erythroblastotic babies, had been sensitized either in childhood or at birth. In one case, a mother received a transfusion fourteen years previously; her first baby was an erythroblastotic baby. But, for all practical purposes, we perhaps have to assume that once these mothers become iso-immunized to the Rh positive factor they remain iso-immunized the rest of their lives. As yet, it has to be proved that a number of years of lapse between babies will change that factor any. The antibody titer decreases after a few years or even after months, but the reticulo-endothelial system still retains the power to rapidly develop antibodies which again will develop erythroblastotic babies. Levine has shown that 0.13 c.c., between 0.1 and 0.2 c.c., of blood will sensitize a mother and produce erythroblastotic babies. Therefore, if we are giving transfusions to Rh negative infants or children, we have to be very careful and give them Rh negative blood. In New York, during the plasma drive, somebody conceived the bright idea of suspending the red cells. Why throw away the red cells that we have been saving from the plasma? Suspend these red cells and give them to the charity hospitals and use them for transfusion purposes. Eighteen women who received these red cells aid were followed subsequently, gave birth to erythroblastotic babies in their first pregnancy. At the present time, we can only say that any mother who has one erythroblastotic baby should perhaps not become pregnant again.

Dr. Woodard Colby: There apparently is still argument as to when to transfuse. When anemia is present at the time the infant comes under observation, then there is no question that prompt transfusion is advisable and this must be repeated at regular intervals until the blood destruction stops. Infants in a critical condition, or with bleeding tendencies, even in the absence of anemia, must be given small, frequent transfusions. Rh positive, Rh negative, and bank bloods have been used with good immediate results in raising hemoglobin and improving the child's clinical condition. But, the Rh negative blood transfusions caused a better sustained rise in hemoglobin, fewer reactions, and lower mortality. If the baby is not anemic, then the use of transfusion may be questioned. The hemoglobin and red counts must be done once or twice a day for about the first ten days and then as indicated. Vitamin K may be given to the blood donors and to the infant but the lack of a good response is probably due to a liver damage. In the Swendson case that Dr. Ikeda has on the board, that child was a very icteric child and the icterus and nucleated red cells lasted from three to four months. The mother told me today that for the first three years the child's teeth were very dark and bluish-black. Now, at the age of six, the teeth are nice and white and clean. I see that Dr. Ikeda's figures run almost equal—males to females. The general figure is about three males to one female, and in the fatal cases is about five or six males to one female.

Dr. L. W. Barry: Until we can desensitize these Rh negative mothers, until we can immunize them against the iso-agglutinins or anti-Rh bodies, we are up against it. I do not know how we can do it. I do not think cesarean section or watching the titer is any solution of the problem. When you do not know what else to do, you transfuse the woman. The patient gets transfused again and again and again. These women are going to be habitual aborters and are going to give birth to erythroblastotic fetuses. We may work on the problem and get something new, so that we can desensitize these women, but so far, I think that after a woman has had two babies she has had just about enough if she is Rh negative. I had one patient who had seven miscarriages, and I told her she could have a cesarean if she wanted it. She did not want it, and she delivered a macerated fetus. In another case, we were watching the titer, and we thought of doing a cesarean. She delivered a perfectly normal baby before anyone could get there.

Dr. X: In a case where a woman had an Rh negative factor and had had a couple of dead babies, would you sterilize her?

Dr. Roger S. Countryman: I did that. One of the dispensary patients had a history of five pregnancies without a living child; three were born living. She had nearly died of anuria with the fourth one following a transfusion, and we did not know about the Rh factor at that time. She was anuric for five days. When she became pregnant the fifth time, with the consent of the patient and her husband, I did a hysterotomy and sterilized her. I think it is justified in such a case.

Dr. Edward Schons: In regard to the x-ray appearance, I think rather than a thickening of the cortex, what you have is a widening of the bone due to an increase in the medulla and a thinning of the cortex. You see that in the skull and in all the long bones. I do not believe that it simulates syphilis.

Dr. W. Ray Shannon: As regards decision whether Rh factor positive or Rh negative blood shall be insisted upon for transfusion of newborn infants showing erythroblastosis, I should like to raise a question. Presumably, an infant suffering from erythroblastosis, the moment his umbilical circulation is interrupted, is a little bundle of antibodies against Rh positive blood cells. Theoretically, at least, these must be neutralized before the infant can hope to carry on under his own power so far as red blood cells are concerned. They should be capable of neutralization by any Rh positive blood cells. It seems, on the surface, that the sooner that established mass of antibodies are neutralized the better for the infant. That would have to be fact unless the products of cell destruction became an important element as regards the safety of the infant. The only argument that those who would insist upon Rh negative blood transfusion can rely is the assurance that sudden release of the products of red cell destruction does result in greater damage to the infant economy than would a situation in which an artificial transport for oxygen were provided while a gradual destruction of the infant's own oxygen transport system went on. It has never been defined to me exactly where, in the process of red-cell development in the infant, the antibodies against his blood cells begin to take hold. If it should so happen that they act at any stage earlier than complete maturity then it should be evident that the quicker they were neutralized by such an antidote, say, as adult cells supplied by transfusion, the better. The answer to this question lies, in my mind, in the future.

Dr. Rosenthal mentioned kernicterus in connection with the form of jaundice we are discussing. He spoke of it as a postmortem finding calling attention to the fact the jaundiced condition of the brain cells did not occur except in brain cells previously damaged. I agree heartily with his implications that it is a postmortem diagnosis and not subject to clinical consideration.

Dr. Ikeda: During the first few days of the baby's life, it is assumed that the degree of hemolysis of its blood is in proportion to the amount of the anti-Rh agglutinins in its circulation. The more anemic or jaundiced the baby, the higher the titer of the anti-Rh agglutinins in its blood. Under such a circumstance, it would seem of more practical and immediate importance for the baby to have a sufficient amount of Rh negative blood in circulation just to maintain its oxygen-carrying function to combat anoxemia, which is likely to be the direct cause of death. Rh positive blood, which is known to be destroyed in four or five days, is given to neutralize the anti-Rh agglutinins, but what about the supply of oxygen which is most needed by the baby? Furthermore, a sudden, massive destruction of incompatible blood within the baby's circulation may cause a shock which may have a disastrous effect on the baby. I would say that if at all possible, the first and immediate transfusion should be done with Rh negative blood. I am particularly glad that Dr. Rosenthal has given us a very comprehensive summary on kernicterus, which has been neglected by many of us who have become absorbed in the hematologic and immunologic aspects of the Rh fac-

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THE TREATMENT OF ACUTE ARTERIAL OCCLUSION OF THE EXTREMITIES WITH SPECIAL REFERENCE TO ANTICOAGULANT THERAPY

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ACUTE arterial occlusion of the femoral or brachial arteries by embolism or thrombosis is a serious medical emergency. Delayed, inadequate or wrong treatment for this condition often results in extensive gangrene.

In cases in which acute arterial occlusion develops a serious underlying cardiac or arterial disease usually is present and therefore the occlusion in the extremity may be only a forerunner of even more serious arterial occlusion elsewhere; for example, in the arteries of the brain, mesentery, lungs or heart. Many patients who have acute arterial occlusion are poor surgical risks because of the cardiac or vascular disease. If gangrene develops and amputation is necessary the patient may succumb in the immediate postoperative period.

Acute arterial occlusion of the extremities may be due to embolism or thrombosis. Arterial embolism occurs as the result of detachment of a thrombus in a fibrillating auricle (which is the most common cause), from a detachment of a mural thrombus which has developed at the site of a large recent myocardial infarct or from a detachment of a portion of a vegetation which has occurred in acute or subacute bacterial endocarditis. Two rare causes of arterial embolism are the detachment of a thrombus in a systemic vein and passage of the embolus from the right side of the heart to the left side through a patent foramen ovale, and the detachment of a thrombus in the aorta or a large artery which becomes impacted at a more distal and narrower point in the arterial tree.

Acute arterial thrombosis *in situ* develops most commonly as the result of arteriosclerosis obliterans at a point where extensive atheromatous change has occurred. It occurs less commonly as a result of thrombo-angiitis obliterans. In a third condition, simple arterial thrombosis, the thrombus develops with minimal or no apparent disease in the arterial wall. Simple arterial thrombosis may occur in blood dyscrasias, particularly polycythemia vera, as a complication of serious infectious diseases even in young adults, during congestive heart failure or as a postoperative complication. Rarely it occurs in young adults without known cause or antecedent disease.

The clinical manifestations of acute arterial occlusion are quite characteristic. Severe pain in the affected extremity usually is present and frequently, but not always, the pain develops quite suddenly. In a few cases the condition develops gradually in a few hours. Pain may be present in the entire leg or arm but usually it is most severe in the most distal portion. The extremity is pale and cold and the superficial veins are collapsed. Some degree of hypesthesia is usually present and anesthesia of the glove or stocking type may occur. There may be partial or complete loss of motor function. Below the point of occlusion arterial pulsations are absent. The diagnosis is based on these clinical manifestations.

Some important points in the physiology of acute arterial occlusion should be considered because they influence treatment. Ten years ago McKechnie and Allen[2] emphasized the fact that acute occlusion of an artery is almost always followed immediately by a severe arterial spasm which affects not only the main arterial trunks below the occlusion but also many of the collateral anastomosing arteries. This spasm is a major contributing factor to the severe acute ischemia of the limb. The spasm may endure for many hours before relaxation occurs spontaneously and, when the spasm finally does subside, severe damage may have occurred in the endothelium of the arteries distal to the occlusion as the result of prolonged ischemia. Secondary arterial thrombosis develops in these distal arteries when the spasm relaxes and, in such cases, extensive gangrene of the limb almost invariably follows. During the period of arterial spasm there may be considerable ischemia of nerve trunks which are very sensitive to deprivation of arterial blood supply so that, even though the circulation may

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ultimately be restored, ischemic neuritis will be a persistent residuum. Another factor which is important in treatment is that thrombosis may continue to develop at the site from which the embolus was detached and be a potential source for more emboli. In the case of occlusion by thrombosis *in situ* the thrombosis may progress in a proximal direction, occluding more and more of the collateral anastomosing arteries, and therefore may result in more serious and irreversible ischemia owing to organic arterial occlusion which is entirely separate from the secondary arterial spasm. For these reasons, two of the cardinal principles of treatment are: (1) relax the arterial spasm as soon as possible and (2) institute as rapidly as possible measures to prevent further thrombosis.

TABLE I. ACUTE ARTERIAL EMBOLISM OF EXTREMITIES

Anticoagulant Therapy

Case	Probable source of embolus	Location of embolus	Duration of therapy, days	Result
1	Fibrillating auricle (rheumatic heart disease)	Right popliteal	14	Recovery of limb
2	Fibrillating auricle (rheumatic heart disease)	Right femoral	54	Recovery of limb
3	Fibrillating auricle (rheumatic heart disease)	Left femoral; both brachials	27	Recovery of all limbs
4	Fibrillating auricle (rheumatic heart disease)	Right brachial	10	Recovery of limb
5	Fibrillating auricle (rheumatic heart disease)	Left brachial	15	Recovery of limb
6	Mural intracardiac thrombosis (myocardial infarction)	Left femoral	11	Recovery of limb; death from cardiac failure

TABLE II. ACUTE ARTERIAL THROMBOSIS OF EXTREMITIES

Anticoagulant Therapy

Case	Arterial disease	Location of thrombus	Duration of therapy, days	Result
1	Thrombo-angiitis obliterans	Right femoral	37	Recovery of limb
2	Thrombo-angiitis obliterans	Right femoral	22	Recovery of limb
3	Arteriosclerosis obliterans	Left femoral	10	Recovery of limb
4	Arteriosclerosis obliterans; diabetes	Right femoral	14	Recovery of limb
5	Arteriosclerosis obliterans; diabetes	Right femoral	9	Gangrene; amputation
6	Thrombosis, postoperative; transurethral resection for carcinoma of prostate	Left brachial	7	Recovery of limb
7	Thrombosis, postoperative; exploration for carcinoma of pancreas	Left femoral	16	Recovery of limb; minor bleeding mouth and rectum
8	Thrombosis, postoperative; radical mastectomy for carcinoma of breast	Right femoral	7	Gangrene; amputation
9	Thrombosis, postoperative; exploration for carcinoma of pancreas	Left femoral	4	Gangrene; amputation; death 7 days later

In their previous report, McKechnie and Allen also emphasized the seriousness of acute arterial occlusion by indicating the results in fifty-seven cases of arterial embolism and sixty cases of acute arterial thrombosis. The patients were treated in various ways, some of which, in view of more recent developments, were probably inadequate, and they did not receive anticoagulant therapy. In slightly more than 45 per cent of the cases of arterial embolism and in slightly more than 50 per cent of the cases of acute arterial thrombosis, gangrene developed. Of the forty-two deaths (36 per cent of 117 cases) in the period immediately following the acute occlusion, four occurred soon after the occlusion without gangrene; twelve occurred following amputation, and in twenty-six cases, gangrene was present but death occurred before amputation of the affected extremity had been performed.

At the present time we feel that the following are important points in the medical treatment of acute arterial occlusion of the extremities:

1. Make the diagnosis early.
2. Start treatment immediately.
3. Do not elevate the extremity.
4. Do not apply heat locally in any form.
5. Use the Sanders oscillating bed in the maximal low foot and minimal low head position. If such a bed is not available, elevate the head of the bed twelve to fifteen inches.
6. Keep the room temperature between 80° to 85° F.
7. Give ½ grain (0.032 gm.) of papaverine hydrochloride intravenously.
8. Give 1½ fluid ounces (45 c.c.) of whisky every four hours.
9. Give heparin and dicumarol.

Attention is called to the specific point that the extremity should not be elevated. When acute venous occlusion develops, elevation of the extremity is advisable, but obviously elevation is never advisable in the presence of acute arterial occlusion because the markedly impaired blood flow through the arteries then will have to overcome gravity also and elevation may render a partially ischemic foot or hand more ischemic than before elevation.

Inasmuch as the extremity is cold after acute arterial occlusion, a rather widespread procedure among patients, and even physicians, is application of some sort of heat locally to the skin. This should never be done. The use of hot water bottles, electric pads, hot packs, bakers or heating lamps is absolutely contra-indicated, because after acute arterial occlusion the skin is very ischemic and burns will develop if a minimal amount of local heat is applied directly to the skin. Furthermore there may be hypesthesia or anesthesia of the skin and the patient may not realize that the skin is being burned. In many instances, gangrene has developed entirely as the result of such burns.

We feel that the use of the Sanders oscillating bed is superior to intermittent suction and pressure and intermittent venous occlusion, for the treatment of acute arterial occlusion of the lower extremity.

The high room temperature, papaverine and whisky are used to produce vasodilatation and are usually successful. However, if papaverine is not effective after the first dose, subsequent doses are rarely effective, and it is unnecessary to repeat the injection.

The plan for anticoagulant therapy is as follows[1]: Fifty milligrams of heparin should be given intravenously every four hours, 300 mg. of dicumarol should be given by mouth immediately and 200 mg. should be given on each succeeding day when the prothrombin is greater than 20 per cent of normal. This plan necessitates daily prothrombin time tests. The blood should be withdrawn for the prothrombin time test each day three hours after the intravenous injection of heparin. If, on the first day, the prothrombin time falls below 20 per cent of normal the administration of heparin may be discontinued. If this plan of medical treatment is instituted early, that is within a few hours after the acute occlusion has occurred, it is usually effective both in terminating the arterial spasm and in preventing further thrombosis. If the arterial spasm does not disappear within twelve hours after the treatment has been started, the sympathetic ganglia supplying the affected extremity should be anesthetized with a local anesthetic agent; and if this also fails to release the arterial spasm and the limb has shown no signs of improvement in the arterial circulation, embolectomy or thrombectomy should be seriously considered. However, embolectomy is rarely necessary and thrombectomy is not often successful.

We have treated acute arterial embolism in six cases and acute arterial thrombosis in nine cases by this plan of treatment. The results are summarized in Tables I and II. In these tables "recovery of the limb" means that gangrene did not develop, that pain was relieved and function was restored. It does not mean that the circulation to the limb was restored entirely to normal because usually there was persistent impairment or absence of pulsations in the affected extremity and some mild to moderate persistent arterial insufficiency. It will be noted that function of the limb was restored in all cases of embolism and in six of the nine cases of acute thrombosis. There was one death in each group. Bleeding as the result of anticoagulant therapy occurred in only one case and the bleeding was minimal.

(Continued on Page 280)

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE REPORT

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Dr. A. H. Wells: Case 3245 has proved to be one of our most interesting pathologic studies of the year. The clinical history has been summarized from the charts of three Duluth hospitals, yet there may be important missing symptoms.

Dr. H. S. Marshall: This sixty-five-year-old retired storekeeper was admitted to the hospital November 19, 1945, two days before his death, complaining of severe nasal bleeding of two days' duration. He was quite unco-operative in regard to relating the nature of his illness. However, he did tell the nurse that he felt very weak from the loss of blood.

His past history included a ruptured, gangrenous, gallbladder with local abscess formation, in 1941. A cholecystectomy and drainage of an "orange"-sized abscess in the gall bladder area was performed at the Webber hospital. A duodenal fistula developed postoperatively, only to close spontaneously within one month. One year later a "grapefruit"-sized hernia protruding through the operative scar was repaired. In April of 1943 he sustained a fractured nose and a laceration over the right eye as the result of a fist fight. There was no loss of consciousness at the time. The fractured nose and laceration were repaired by his physician who later noted that—although the patient had been a rather obese, affable, personality with a tendency to heavy drinking—he became a distinctly disagreeable, good-for-nothing, chronic alcoholic who, in rapid succession, mortgaged his store and lost it and mortgaged his home and lost it, using the money so obtained to purchase, on the average, over one and a half quarts of whiskey a day. During this period of approximately two and a half years, he had had several attacks of what was considered intestinal obstruction, generally lasting two or three days. On three occasions he was admitted to a hospital where, following the use of Wangensteen's decompression tube therapy, he showed rapid improvement. The history relating to one of these admissions to St. Mary's Hospital reveals that he had had eight to nine emeses every day for six days preceding admission. There apparently had been no bowel movements during this period of vomiting. Headaches were not mentioned. He claimed to have refrained from using alcohol for three weeks. It was also learned that after his alcoholic bouts his vomiting and abdominal "gas" pains would become worse. He had had rheumatic fever twenty-five years previously.

His physical examination was essentially negative. The blood pressure was 130/80 and temperature 100° F. The abdomen was soft, non-tender, and had no palpable masses. His white blood cell count was 10,400 with 75 per cent neutrophiles and 21 per cent lymphocytes. The red blood cell count was 4,300,000 and the hemoglobin 12.2 grams. The blood Kline test was negative. On the second hospital day he was greatly improved with gastric decompression therapy. His obstruction was relieved and he left the hospital on the third day.

On admission to this hospital, he was somewhat obese and his muscles were flabby. His white blood cell count was 13,350; red blood cell count 4,100,000; and hemoglobin 13.5 grams. There were 88 per cent neutrophiles. Urine examination was essentially normal. His temperature was 99° F., and respirations 18 per minute. The abdomen was relaxed and did not contain a palpable mass. There was marked pulmonary emphysema. Heart tones were distant and free from murmurs and irregularities in rhythm. The pulse was 80 per minute. The blood pressure on several occasions was 150/100. During his last two days there was no further nasal bleeding, and he rested quietly. There was no apparent suffering except for some nausea and undescribed pain in his abdomen. He vomited about 150 c.c. of light colored fluid about six hours before his death.

Dr. A. H. Wells: The case is now open for diagnoses.

Physicians: Coronary thrombosis with myocardial infarction; carcinomatosis of peritoneal surfaces; tuberculous peritonitis; high intestinal obstruction, due to adhesions; brain tumor; chronic subdural hematoma.

Dr. A. H. Wells: Dr. Tuohy's diagnosis is correct. Would you tell us what led you to the proper diagnosis?

Dr. E. L. Tuohy: A serious change in character or mental status following an injury to the head, associated with recurrent evidences of increased intracranial pressure such as bouts of vomiting, should always make one consider subdural hematoma.

Necropsy

The necropsy revealed a remarkable combination of a cystic degeneration of the dura with a "subdural hygroma" on the left side and a chronic intradural hemorrhagic cyst, "chronic subdural hematoma," on the right side. The hemorrhagic cyst had caused a severe compression of the entire length of the right cerebral hem-

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isphere so that its surface over a large area was concave instead of convex as seen in this kodachrome slide. The lesion extended from the anterior most frontal area to the posterior most occiput and involved about one-half of the distance between the sagittal sinus and the base of the skull along this entire distance. It measured from 1 to 2.5 cms. in thickness and was composed of a fairly thick-walled cyst demonstrated in this kodachrome picture (Fig. 1). The cyst was filled with a xanthochromic watery fluid with scattered small dark red blood clots (x). The latter totalled about 20 c.c. Many of these clots appeared to be of very recent origin. The thick cyst walls are incorporated in the split layers of the meningeal half of the dura. The meningeal layer of the dura has completely separated from the endosteal layer under the hemorrhagic cyst. (The meningeal and endosteal layers represent the two embryonic sources of the dura). Because of this separation of the two layers of the pachymeninx one may easily break through the meningeal layer of the dura at the cyst margin (y) and lift up the thick-walled cyst, leaving the endosteal layer (z) beneath, attached to the skull bone and having every gross appearance of normal intact dura.

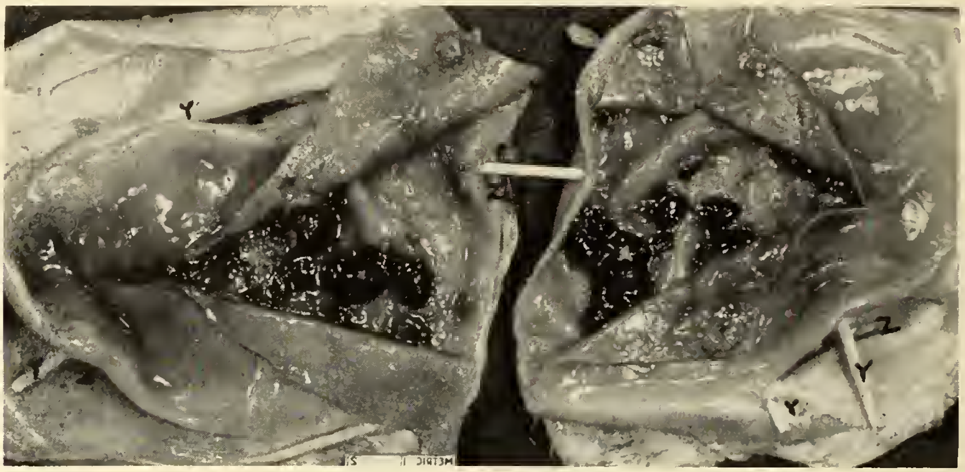

Fig. 1.—Intradural hematoma with opened cyst wall exposing recent blood clots (x), margins (y) are separated to expose endosteal dura (z).

Multiple histologic sections taken from the margins of the hemorrhagic cyst (Fig. 2) all reveal the location of the cyst within the meningeal layer of the dura (x). The endosteal layer (y) is completely uninvolved. Active fibroblastic organization of recurrent hemorrhages is most evident in this old cyst at its margin (z). It is in this new organizing connective tissue that one frequently finds huge congested and recently ruptured capillaries (Fig. 3), the obvious source of the recurrent hemorrhages within the old cyst wall.

In the superior frontal region of the left dura was a large flat cystic space filled with clear, watery fluid, measuring 6 cm. in diameter and about 5 mm. in depth. The fluid could be squeezed readily to other parts of the dura in which the layers appeared grossly intact. There was a mottling of brownish-yellow of old blood pigmeint and bright red of recent hemorrhages throughout the left frontoparietal region of the dura.

Many histologic sections taken from this entire area of the dura reveal an extensive cystic degenerative change primarily located between the inner third and the outer two-thirds (Fig. 4-x) of the meningeal layer (y) of the dura. The endosteal layer (z) has no significant degeneration. The meningeal membrane degeneration is evidenced first by fading and disappearance of fibroblasts, later by fading and disappearance of the collagenous fibrils and, finally, by the formation of cystic spaces (Fig. 5-x). These are at first microscopic in size and later grossly visible cysts. There is, in addition to this, the occurrence of small flare-like hemorrhages (y) at the margins of the normally present giant capillaries in the meningeal portion of the dura. Occasionally, a few red blood cells from these tiny hemorrhages have leaked into the cystic spaces. These giant capillaries and minute hemorrhages are seen in nearly every section taken from the frontoparietal regions of both sides of the dura. There are also many iron pigment laden phagocytes (z) —the remnants of previous hemorrhages. There is practically no inflammatory cell infiltration except for occasional lymphocytes in the immediate vicinity of the larger hemorrhages. The endosteal dura has no significant changes excepting for rare isolated pigment-laden phagocytes. A few pigment-laden phagocytes are also present in the arachnoid space in the sections from the cerebral cortex immediately underlying the hematoma. There are no significant histologic changes in the nerve cells, using routine hematoxylin and eosin stains.

Incidental necropsy findings included a grade II cirrhosis of the liver and mild toxic changes in the myocardium, liver, spleen, and kidneys. There were adhesions between the duodenum and bed of the gall bladder with some dilatation of the lumen of the duodenum but no evidence whatever of obstruction of any part of the small or large intestines. There were no diverticula, tu-

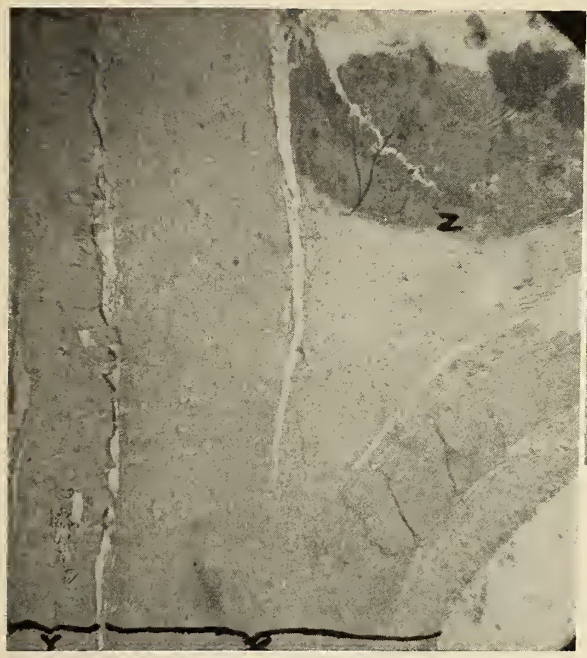

Fig. 2.—Margin of intradural hematoma showing endosteal dura (*y*) completely separated from meningeal dura (*x*). New granulation tissue organizing recent hemorrhages into cyst cavity at (*z*).

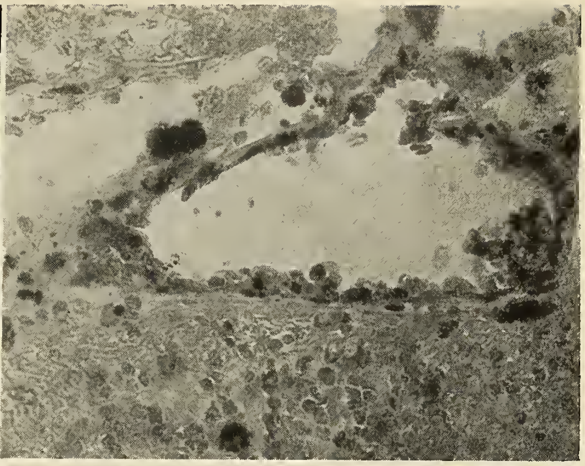

Fig. 3.—Giant capillary in organizing blood clot at cyst margin (Fig. 2-*z*) with surrounding hemorrhage and hemosiderin laden phagocyte.

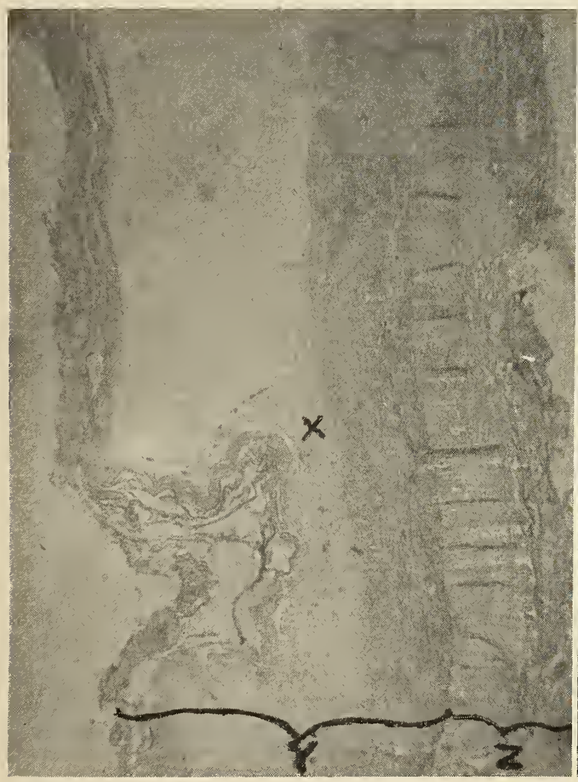

Fig. 4.—Cross section of pachymeninx revealing normal endosteal dura (*z*), meningeal dura (*y*), and idiopathic cystic degeneration of the meningeal dura (*x*).

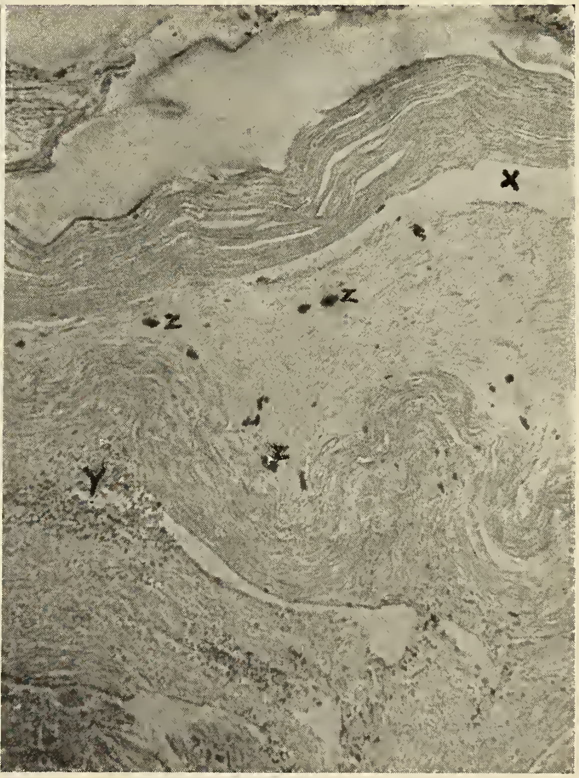

Fig. 5.—Meningeal dura with cystic degeneration (*x*), recent hemorrhages (*y*) from giant capillary and pigment-laden phagocytes (*z*).

mor masses, or areas of inflammation in any part of of the gastro-intestinal tract. There was no pneumonia.

Discussion

Dr. D. W. Wheeler: Why wasn't the cirrhosis of the liver the cause of death?

Dr. A. H. Wells: The scarring of the liver was not advanced enough to be of great significance. In addition, there were only mild fatty changes in the liver cells. There was no ascites, edema, anemia, jaundice, gastro-intestinal hemorrhage, or dilatation of the portal tributaries.

Dr. W. A. Coventry: How do you know that the hematoma caused death?

Dr. A. H. Well.: The hemorrhagic cyst was quite large and had caused a great deal of compression of the right cerebral hemisphere. No other cause of death was found. The reason the patient died when he did and not a year previously may be because of recent hemorrhages into the cyst (20 c.c.) being incompatible with life, due to increased intercranial pressure.

Etiology

In spite of my limited experience with so-called chronic subdural hematoma and the present incompleteness of the literature survey of the subject, it is my opinion that the majority of neurosurgeons and pathologists have an erroneous conception of its histogenesis. At least, they rearely even consider the possibility of intradural origin.

The present most widely accepted concept of the origin of "chronic subdural hematoma"[28,33] includes: a subdural hemorrhage from injured subarachnoid veins, "bridging veins" or veins passing from the surface of the cortex to the saggital sinus; fibroblastic organization of the two surfaces of the blood clot from below into the dural surface and from its margins over the brain surface with capsule formation; central liquefaction of the blood clot and, finally, cyst formation.

In 1914 Korwitz[26] and later Hannah[16], Kaump and Love[21] and Baker[4] describe these hemorrhagic cysts as true intradural hematomas. In fact, Baker[5] feels that there is never a fibrous organization with cyst formation resulting from subdural hemorrhages, that the blood clots always absorb. To my knowledge, typical chronic hemorrhagic cysts have never been produced experimentally and are not found after craniotomy.

The many histologic sections taken from various areas of the dura of our present case and those of previous cases, reveal beyond any question, a sequence of events consisting of: (1) early idiopathic degenerative changes in the fibrous connective tissue of the meningeal layer of the dura; (2) cystic formations of varying size; (3) recurrent hemorrhages from the normal giant capillaries of the meningeal dura; (4) chronic hemorrhagic cyst formation within the meningeal dura with recurrent hemorrhages into the cyst. A somewhat similar process occurs in idiopathic medial necrosis of the aorta, resulting in dissecting aneurysm. When the facts are finally generally accepted, it is possible that all organized cystic collections of fluid and blood now generally considered to be subdural in origin are, in fact, intradural. In some cases, the basic disease process will be a cystic degenerative change of the meningeal portion of the dura, resulting in a splitting of this layer of the dura; in others there will be a splitting of the normal dura. The normally huge capillaries of the dura are subject to unusual forces not found in other capillaries of the body. These forces may be the result of changes in either the arterial or venous blood pressure of the brain or dura. They include stasis and engorgement of the capillaries due to back pressure in the veins of the dura and the frequently mentioned "dry cupping" or suction force exerted by changes in intracranial pressure. The actual hemorrhages from these capillaries may be precipitated "spontaneously" by these pressure sources or by a blow on the head, especially when the dural capillaries are engorged. Intradural hemorrhages of the newborn and of younger adults will be the result of the giant capillary ruptures with hemorrhages splitting the meningeal layer of the dura or a separation of the two embryonic layers without a preceding cystic degenerative change in the dura. These layers at times can be split normally without much difficulty. True subdural hemorrhages which do not kill will be eventually absorbed without cyst formation. Hemorrhagic diseases of the blood such as purpura hemorrhagica, scurvy, and leukemia, predispose to intradural hemorrhage. The habitual use of alcohol not only predisposes to head trauma but also either accentuates idiopathic cystic degeneration of the dura, or in some way enhances intradural capillary hemorrhages. Infectious processes of the dura of known and unknown etiology may rarely be important factors in intradural hemorrhage.

Pathologic Anatomy

Hemorrhages, in relationship to the meninges, must be classified as: (1) epidural, (2) intradural, (3) subdural, (4) subarachnoid or intrapia-arachnoid, and (5) subpial. We are concerned here with those cases in which a chronic hemorrhagic cyst formation attached to the dura is the ultimate result of the hemorrhage. These hemorrhages are nearly always located in the fronto-parietal areas over the convex portion of the cerebrum. Rarely, they are found in the occipital, subtentorial, basal, and spinal areas.[3] In a review of 204 cases described by ten authors, sixty-one, or one-third, were bilateral.[4] The gross appearance depends to some extent upon the age of the hemorrhage. Those of very recent origin will have a fresh dark red blood clot and, even if explored on the day of the injury, or within two weeks of the time of the injury, there will always be a limiting membrane holding the blood clot in the fronto-parietal area and preventing the action of gravity. Munro and Merrit[28,33] describe an inner limiting membrane of fibrin, which is later organized by fibroblasts. This is also repeatedly theorized and described by other authors as the origin of the inner membrane and, of course, touches the very heart of this controversy. There is central liquefaction of the blood clot and fibroblastic organization of the peripheral parts of the clot. New giant capillaries are formed. Finally, the wall becomes a thick, poorly cellular, hyalinized layer or laminated layers of fibroblastic tissue, which may even become calcified. Recurrent hemorrhages into the cyst cavity are common, so that the contents of the cyst may vary from a slightly xanthochromic fluid to a solid mass of blood clot in various stages of decomposition. A detailed study of the histopathology has been described in connection with our present-case study.

Clinical Manifestations

Although in any one physician's practice, cystic hematomas of the dura are rare, their potentialities are such that a thorough understanding of their clinical recognition is mandatory. In one analysis[22] of 245 cases of various authors 82 per cent were in adults and of these 87 per cent were males. There is a peak of frequency during the first year of life, and the greatest incidence occurs between the fourth and sixth decades. The history of mild trauma[5,6,7,35] preceding the onset of symptoms and signs is a generally recognized feature. Only a small percentage of the patients suffer from fractures of the skull.[6] In some patients there may be no signs or symptoms of the encapsulated hematoma.[24] However, in the majority, a thorough study of the case should lead to suspicion of the lesion, necessitating bilateral trephinement for the diagnosis. Any discussion of the subject must be divided into the manifestations evidenced in adults and infants separately. The clinical findings in adults are mainly dependent upon a rapid to extremely slow increase in intracranial pressure brought to bear primarily in the fronto-parietal regions. They are very protean and characteristically fluctuate from time to time. The condition should always be considered in patients with cranial trauma in which the symptoms do not subside after months, or even years, following the injury. In a careful study of forty-two cases of "chronic subdural hematoma" Jelsma[20] found the following frequency of clinical phenomena: mental changes 86 per cent, headaches 79 per cent, drowsiness 79 per cent, motor disturbances 70 per cent, latent period 70 per cent, coma 57 per cent, reflex changes 56 per cent, cranial nerve disturbances 47 per cent, and a lucid interval 45 per cent. Of the less frequent manifestations having a mean average of 19.7 per cent, he included in order of their frequency: choked disc, vomiting, pulse changes, increased temperature, sensory disturbances, nystagmus, retinal hemorrhage and fractured skull (4.9 per cent). Among the more frequent mental changes are failing memory, confusion, full blown psychoses, uncontrollable irrationalism, excitement, serious character depreciation, and changes in spontaneity of personality.[1,15,17] The entire gamut of psychiatric abnormalities are possible, including neurosis, mania, depression, paranoid delusions, and gross deterioration.[9] Among 3,100 consecutive autopsies of psychotic patients there were 245, or 7.9 per cent subdural hematomas.[2] Effects referable to the cranial nerves frequently include diplopia, failing vision, hemianopsia, tinnitus, and decreased hearing. A homolateral dilatation of the pupil was correct in localizing the hematoma in over 50 per cent of the cases.[1,3] This sign is explained[15] by the fact that the brain stem is shifted toward the opposite side of the tentorial opening. Later the hippocampal gyrus is forced between the brain stem and the margin of the tentorium on the same side, pressing on the third cranial nerve, causing dilatation of the pupil. The frequent finding of homolateral nerve disturbances, especially that of hemiparesis, is described as being due to either pressure of the margin of the tentorium against the brain stem on the opposite side of the lesion or else pressure of the motor cortex against the skull on the opposite side. In sixty-two cases[31] 11 per cent had visual field defects. In a review of 244 cases from the literature, 44 per cent were described as having choked discs.[23] Practically all authors agreed that in adults the diagnosis can be most easily established by bilateral trephine openings. However, many other adjuncts have been used to advantage. Encephalographic studies are recommended by some[27] and discouraged by others.[38] Generally, they are not found very useful. Psychometric tests were found of considerable value in relationship to war injuries.[1] Dural hematomas result in syndromes which can be psychiatrically distinguished from war neuroses.[1] The electro-encephalogram produces a wave pattern in cases of subdural hemorrhage which is not pathognomonic of the condition, but a valuable adjunct in its diagnosis.[36] An x-ray demonstration of the shift of the pineal gland[10] has some diagnostic value. The condition must be differentiated from brain tumor, cerebral arteriosclerosis, or thrombosis, post-encephalitic syndromes, and persistent headaches of unknown origin.[18]

Because of the frequency of subdural hematomas in infants, the great likelihood of the lesion's interfering with a rapidly growing brain, the bizarre clinical manifestations, and the ease and safety with which the lesion can be diagnosed with certainty by the use of bilateral needle puncture between cranial sutures into the dural cyst, as emphasized by Ingraham and Matson[18], it is absolutely essential for physicians caring for infants to have a thorough understanding of the condition. The generalized symptoms, such as fever, vomiting, hyper-irritability, and failure to gain weight, are frequently found alone or in addition to the more specific neurologic findings of convulsions, stupor, and paralysis. All hydrocephalics should be considered possible cases of subdural hematoma since there frequently results a separation of the cranial sutures and bulging of the fontanelles, as the result of dural hemorrhages.

Treatment

Once the diagnosis is made, all authorities agree that operation is indicated. The points of disagreement concern the size of opening through the skull, how much of the cyst membrane must be removed, and whether drains should be left in place or not. Several outstanding neuro-surgeons[20,24,25,35,39] feel that an osteoplastic flap with more or less complete removal of the hematoma and its walls is advisable. Many others[8,10,22,37] feel, for the most part, that the more simple procedure of trephine openings with irrigation and suction of the contents of the cyst and the removal of lessor amounts of the cyst wall is adequate in the majority of cases. All authorities agree that bilateral bur openings are indicated in the fronto-parietal area. The treatment of chronic dural hematoma is different for patients with fused cranial bones, as compared to that most efficacious for infants. With an experience of ninety-eight cases of subdural hematoma in infants, Ingraham and Matson[19] have advised a gradual decompression of the dural hematoma by the repeated aspiration of the contents of the cyst for a period of a week or two preceding craniotomy and complete removal of the cyst wall and contents. The gradual decompression is easily carried out with a syringe and needle and allows a period of improvement in the patient's general condition before the more extensive surgical procedure.

Summary

The case of a sixty-five-year-old chronic alcoholic with a chronic intradural hemorrhagic cyst, the immediate cause of death, on one side and a chronic intradural cyst on the other, has been described. There was an injury which may have precipitated the hemorrhage two and a half years before his death, at which time he had a serious change in personality and began experiencing repeated attacks of vomiting.

The histogenesis of the chronic hemorrhagic cyst of the dura in this case was traced to an extensive cystic degenerative disease of the dura. The question is raised whether so-called chronic subdural hematoma ever arises from true subdural hemorrhages.

A brief review of the etiology, pathologic anatomy, clinical manifestations, and treatment is included.

Necropsy Diagnosis

1. Idiopathic cystic degeneration of the dura.
2. Chronic intradural hematoma (immediate cause of death).
3. Compression of right cerebral hemisphere.
4. Intradural hygroma.
5. Cirrhosis of the liver.
6. Chronic alcoholism (from history).

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FACTORS IN RURAL HEALTH IN MINNESOTA

(Continued from Page 226)

tracts at a cost which is not excessive, will be available to all of the people of Minnesota. It is anticipated that under these contracts, free choice of physician is assured. Also, it is at present anticipated that the contracts will be available to virtually any citizen of the state. Until all of the details are finally determined, it is not possible to predict the costs nor the coverage under the contract. It is expected that the plan will be a distinct step in the right direction of providing adequate, good medical care at low cost.

In conclusion, then, it seems apparent, first, that good medical care is available to all people of the state; and, secondly in the not-too-distant future, adequate, good medical care will be purchasable at a cost which any or all of the people of Minnesota can afford to pay.

NOTES ON THE HISTORY OF MEDICINE IN HOUSTON COUNTY PRIOR TO 1900

By NORA H. GUTHREY†
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(Continued from February issue)

Franklin H. Whitney, born probably about 1862, was a graduate of the Hahnemann Medical College of Chicago in 1883, and it is recorded that on May 27, 1885, he received state license No. 1061 (H) to practice medicine in Minnesota. Shortly afterward he settled in La Crescent, Houston County, a village whose early hope of metropolitan growth had not materialized, and he remained there an undetermined number of years. In 1895 he served as county coroner. Information has not been available as to his career thereafter.

J. R. Wilson, a practitioner of the regular school of medicine, was certified to practice medicine in Minnesota under the Affidavit Ruling of 1887. There is record that he was in Pickwick, Winona County, in 1890, and earlier, and that in the middle nineties he was in Hokah, Houston County.

* * *

In the conduct of research in relation to early physicians in several counties of southern Minnesota it has become evident that there were many practitioners, unchronicled in official directories and reports, who drifted across the region, staying a few months or a year, leaving mention of their names in local newspapers. Some of these men were ignorant opportunists, some were sincere but incompetent, others were well trained in their day. From this mingled group some few names have appeared in these notes on physicians of Houston County, and it may well be, as was suggested earlier, that there were others of whom record has not been obtained and others still of whom no record exists. Of the able and stable practitioners, however, who maintained and advanced their profession in Houston County, it is hoped that the roster is complete.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900*

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> ".....I have been able to derive much information, which if not always exact, was indicative of truth."
>
> WILLIAM W. FOLWELL,
> A History of Minnesota, 1926, Vol. 1, page xii

IN 1850 the region that soon was to become Fillmore County, Minnesota Territory, had lain for centuries in its natural beauty and productiveness, almost untouched save by time and weather. Its only inhabitants had been the wild animals that made it their home and the nomadic Indians, scarcely less wild, who roamed over it on foot or on their half-tamed ponies. In the opening decades of the nineteenth century there had crossed it, perhaps occasional white explorers and trappers.

As the fifties began to unroll, white men coming into southern Minnesota in search of homes found this region, both lovely and stern, to their liking. Of rich soil, usable limestone, abundant streams and varied woodland, it offered all they sought. Nor were they blind to the freedom of its upland prairies and the rare scenic beauty of its forested slopes and its river valleys, precipitous in the eastern portion as they neared the Mississippi River, shallower in the west; nor to the curious interest and the possible usefulness of those geologic phenomena, the "sink holes," caves and underground passages of the western stretches. Not much later the county was to be recognized as a paradise for geologists because of its ancient and varied formations and no less as a paradise for botanists because of its lush production of grasses, flowers, vines, nuts and fruits, and of trees valuable for timber, growth that even to the untutored eye was fair promise of the friendliness and bounty of the land when cultivated crops and orchards should have been introduced.

Beginning in 1851 the settlers came into what is now Fillmore County, as into all southeastern Minnesota, at first slowly, then in constantly increasing numbers, entering by the route so often mentioned: Overland to points on the eastern shore of the Mississippi River, in Illinois and Wisconsin and as far south as Kentucky and Tennessee, and thence by boat to points on the western bank.

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*In a preceding article on the history of medicine in Houston County there was included much material relating to general history and medical history common to Houston and Fillmore Counties and other counties of southeastern Minnesota that will not be repeated here. In the present article appears new material which in turn applies not to Fillmore County alone but to Houston County and other counties of the region as well.

†A member of the editorial department, 1916-1919; 1919-1939, personal secretary and assistant to the late Dr. William James Mayo.

Many landed in Iowa; many in Houston County, Minnesota, and others came down from the little settlements of St. Paul and St. Anthony, which they had reached by northern routes. All went first to the land office at Brownsville, Houston County (later the office was moved to Chatfield, Fillmore and Olmsted Counties), and from there fanned out into the waiting land. One immigrant of these hundreds, and he must have been typical, traveled by railroad "from a town in Wisconsin to the Mississippi (LaCrosse), then took steamboat to Brownsville, then the stage to Elliota (in Fillmore County) and then on foot over the prairie" to his destination farther west.

Fillmore County, which was named for President Millard Fillmore, is the second county of the state from the Mississippi River in the tier that borders Iowa. On the east is Houston County, on the north are Winona and Olmsted Counties and on the west is Mower County. The boundaries of Fillmore County, approximately as they exist today, were established by an act of the state legislature on February 23, 1854, whereby they were much restricted from a widely comprehensive survey of a year earlier. To touch briefly on the controversies that the county experienced over the location of the county seat. First established in Winona, early in 1853, the county seat was transferred to Chatfield, obviously an illogical location, on the northern edge of the county, in December of that year; from March 2, 1855, to April 25, 1856, it was in Carimona, almost in the center of the county; on April 26, when public vote had fallen for Preston, about four miles northeast and more nearly central, Mr. John Kaercher, a substantial citizen of the county, later the founder of Clear Grit, but in 1856 in Preston, sent a man and team to Carimona for the records, which were conveyed to Preston in two coffee sacks.

The settlers entered the borders of Fillmore County on foot, with oxen, horses and in a few instances with few mules. These pioneers were of many nationalities, English, Scotch, Welsh, Irish, Bohemian, German, Dutch, Danish, Swedish and Norwegian, and whole clans as well as individual adventurers were in the movement from east to west. Many came directly to Minnesota from their native lands across the Atlantic; others were from families who had lived for a generation, or several generations, in New England or along the Atlantic seaboard; still others had pioneered in the thirties and forties from the East into Ohio, Indiana, Wisconsin, Michigan and elsewhere. Fillmore County became, and has remained, one of the most populous counties in the state; there were 13,542 inhabitants in 1860; 4,000 more in 1865; and in 1875 there were more than 28,000. From census to census since 1870 the population, preponderantly Scandinavian, has not varied more than 4,000; the peak was reached in 1895 with a population of 28,599.

Although the settlers retained many of the Indian names long established in the territory, they stamped on their new land their own names and nationalities, their hopes and homesickness, their imagination, political beliefs and religious faiths in the titles that they gave to natural formations and to civic divisions and organizations, as one may see who scans a map on which creeks, rivers, swamps, rocks and hills, townships and villages are indicated.

These people were of all occupations and professions. They promptly cleared and planted land; established local governing boards; built homes, many schools, and churches of a dozen denominations. Those from New England, especially, evincing hope and faith in the local water power, founded mills of different kinds, utilizing every stream; disappointingly soon the water power proved to be inadequate and all but a few mills and waterwheels eventually were abandoned. In some communities vestiges of the dams and wheels can still be seen. They opened manufactories of the staple articles needed by all: woolen material, furniture, brooms, barrels, boxes and shingles, wagons and sleighs. They opened stores and blacksmith shops and tin shops. They helped to promote and support a network of stage-lines that carried mail and throngs of passengers.

In Fillmore County, as in contiguous counties, to meet the needs of the many travelers there came into being wayside taverns which provided stables and "trusty ostlers" for the horses and extended almost fabulous hospitality to the public. To name only a few of these inns, famous throughout the state, which still live in memories, there were the Carimona House, in the village of Carimona, and the Stanwix in Preston, the Medary House in Chatfield. The famous Old Territorial Road was surveyed in 1855 over a trail of earlier use and passed from St. Paul through Cannon Falls, Oronoco and Rochester and, in Fillmore County, through Chatfield and southeasterly across the county into Canton Township and on to Dubuque, Iowa. Another route in the county followed the South Branch and the main stream of the Root River, passing the sites of Rushford, Carimona and Forestville, and gave access to La Crosse through Hokah on the east and to Mankato through Blue Earth on the west. In the southern part of the county and the northern part of Winnesheik and Howard Counties, Iowa, the pioneers reached Brownsville, Houston County, and La Crosse over the Norwegian Ridge Route. One branch of this road, in southeastern Fillmore County, passed through Elliota, south of the present town of Canton (founded in 1879), and, once in Houston County, turned northeast. The other branch, a few miles north, originated in the south central part of Fillmore County, passed through Lenora and Newburg and entered Houston County near Rushford. These two branches converged on Diamond Ridge and separated at Caledonia, diverting traffic respectively to Brownsville and to Hokah and La Crosse.

In Fillmore County physicians and lawyers among the settlers opened offices and hardy editors founded newspapers, which sheets were of varying fortunes. One proprietor said plaintively, "As is well known, there is a great mortality among new newspapers, the death rate exceeding even that of the human race; in fact, as many newspapers relatively die before five months of age as children before five years." But at least they disseminated information to the eager pioneers. And some of the utterances, often rhetorical, of editors give now much knowledge of conditions then, as for instance, about transportation. Among the stage-lines and mail routes through the county were those of O. M. Walker, a well-known citizen in Minnesota and Iowa. Our plaintive editor expressed himself thus to Mr. Walker: "Why is it that it requires from seven to ten days for a newspaper or letter to find its way to Chatfield, through the mail, from St. Paul? We do not like to be controversial, finding fault, but it certainly demands inquiry, when it only requires from 24 to 30 hours to make the trip between these points, by way of Winona, the present route of the mail. Again, how does it happen that the Chatfield mail is sometimes carried through to Rochester before we receive it? Mr. Walker will please take notice." Mr. Walker, apparently, did not take notice, since more of the same appeared.

Old files of newspapers from the fifties through the next few decades give the reader an absorbing and vivid picture of the life of the times; give endless material that could be woven into the fabric of an anecdotal history. Those were the years when county superintendants of schools stressed in their printed reports to the public the value of reading, writing and spelling and spoke scathingly of teachers who were delinquent in imparting knowledge of these subjects; when a ten dollar bill was a "Sweet William;" when photographers were "daguerrean artists;" when farmers advertised for lost martingales, for strayed horses and, particularly, for lost oxen. For instance, "one red ox, with staggy horns, white spot on face and white spots on the belly and hips, a long red tail with a white end," happily was recovered, a year after it had strayed, in a township in another part of the county. And a team of working oxen was lost; the near ox, light brindle with a large white spot on the forehead, the off ox, dun color with a small white spot on the forehead; both oxen had brass knobs on their horns and their yoke was a new red one with a patented bow key. Every druggist announced that strychnine was always on hand, presumably for the extermination of animal pests on farms; or perhaps, it has been suggested, because it was used in medical practice then more than now and was hard to get. When a druggist, particularly a physician-druggist, had a good supply he made the fact known. There were fascinating advertisements of Yankee notions, magazines, clairvoyants and hair restorers; patent medicines, painkillers and advice to opium eaters, cancer cures, even as now, and casual mention, not as now, of the outbreak of diphtheria or smallpox in a vicinity. By the early eighties there appeared an occasional advertisement by a physician for a lost instrument: a hydromatic syringe, a perforator used in cases of embryusterulcia, an aspirator used in cases of hydrenleroma phalocele, a myopodiartotican used in cases of myopia and a dentiscalpium used in cases of calcareous precipitation. (The spelling and definitions are as they were printed).

With the coming of the Civil War, when Fillmore County was eight years old and not yet recovered from the panic of 1857, there was much newspaper comment, such as (in 1862), "Ho! for the War! Intervention of England and France. 50,000 more soldiers. Call for a sixth regiment of Minnesota Volunteers;" about enrollment boards, exemptions from service, enlistment of troops and paying of bounties to stimulate recruiting. Although an Olmsted County newspaper commented disparagingly on men from Fillmore County who presented themselves before the Enrollment Board of the district, in Rochester, for exemption, Fillmore County nevertheless was represented with honor in the Union Army in many regiments. Company A of the Second Minnesota Infantry, for example, was made up chiefly from Chatfield; and although the famous Rangers of the county were not in the war, they were on duty within the state. Immediately after the war politics waxed and waned; during the presidential campaign numerous Grant and Colfax Clubs were organized in Fillmore County. There were further notices about bounties and many about collection of pensions. Finally, for the convenience of the veterans, there were medical examining boards, made up of local physicians, of the county bureau of pensions.

Through all the years, from the early fifties on down, there was constant promotion of railroads until finally the Southern Minnesota Railroad and the Caledonia, Mississippi and Western were established. Thereafter, in the late sixties, and as changes and extensions of the rails took place during the seventies, eighties and early nineties, there was increasing prosperity in some localities and there were declining fortunes in others. Many disappointed towns of Fillmore County were left to one side, especially by the Southern Minnesota Railroad. These little settlements, once thriving, founded each in the high hope that it would become the county seat, a shipping point or a manufacturing center like prosperous manufacturing towns in New England, were doomed to become "phantom villages;" a few of them were Beldena, Liberty, Hamilton, Washington, Etna, Carimona, Forestville, Fillmore and Elliota.

(To be continued in the April issue)

President's Letter

Before, during, and even since the war, European nations have borrowed and copied our industrial methods, which were recognized as superior. Now, the political forces of this country are trying to borrow and copy the equally inferior European medical system.

Such a statement as this raises two questions: First, how does the quality of medical care in this country compare with that of European countries having government-controlled medicine? And, second, how does the cost of medical care in this country compare with that of European countries having compulsory health insurance?

Before the war in Germany there was one physician for every 1,307 persons; in England, one to 1,069; and in the United States, one to 767. Up until 1936, for periods of three, five and ten years, heart disease, diabetes and cancer, respectively, increased at least 50 per cent more rapidly in both England and Germany than in the United States. Tuberculosis decreased about one-third in this country, whereas in England and Germany, only one-fourth and one-fifth, respectively. While diphtheria and other infectious diseases experienced a two-thirds decrease in this country, there was only a minimal decrease in England during the same years, and an actual increase of 200 per cent in Germany. Thus health conditions have steadily become worse in Europe.

In the United States, however, health conditions have constantly improved until they now are better than those of any other country with the same population in the world. Further evidence of the excellence of American medicine is seen in the fact that the United States is now the world's center for medical education. It has wrested this distinction from countries with compulsory health insurance.

Enough about quality, what about the cost? The National Resources Planning board found in 1935-36 that consumer expenditures for medical care amounted to less than four per cent of the national income. The Department of Labor, in 1940, stated that the average American wage earner spends $59 annually for his *family's* health; and, of this, only $13 goes to his doctor. And the Department of Agriculture found that families in small mid-western cities with incomes of from $1,200 to $1,750 spend only three per cent of income for physicians' and hospital bills.

Under the Wagner-Murray-Dingell Bill, a person receiving $100 a month pays $4 a month in taxes, while his employer pays another $4, making a total of $8 a month, or $96 a year. When the salary is $300 a month, the costs become $12 a month for wage earner and employer, or $288 a year. Thus, costs under this bill for compulsory health insurance are greater, both to individuals and to the country as a whole.

And what about costs of health insurance in European countries? Let it suffice to say that in Great Britain, in 1906, national and local taxes were equal to one-thirteenth of the national income; whereas in 1930, local and national taxes amounted to one-third of the national income. Furthermore, the cost of social (medical) service in Great Britain increased 1300 per cent during this period of twenty-five years.

From these incomplete data two conclusions can be drawn: first, that, beyond a doubt, medical care under the present American system is distinctly better than it is under the systems of England or Germany where compulsory health insurance obtains, and, second, that medical care under the present American system costs less than it does under the Wagner-Murray-Dingell Bill or under the system in England, where compulsory sickness insurance has existed since 1911.

Perhaps the inference to be drawn is that plans should be promulgated by the medical profession to provide adequate, high-standard medical care at low consumer cost. This is being done in Minnesota and nationally through the medium of voluntary, prepaid medical care projects. Thus advantages and benefits of both systems will be incorporated in the new American system.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE USE OF DEMEROL FOR OBSTETRIC ANALGESIA

THE use of demerol (1-methyl 4-phenylpiperidine, 4-carboxylic acid ethyl ester by diachloride) to relieve the pain of parturition was begun rather soon after the introduction of continuous caudal anesthesia. One of the most extensive experiences with this drug for the purpose under consideration, published thus far, is that of Schumann.[2] He reported the results of use of demerol and scopolamine in 1,000 deliveries at the Boston Lying-in Hospital. He declared that the primary purpose in his use of this type of medication was the establishment of complete amnesia. He concluded that this result was obtained in 70 per cent of the cases (uncorrected figure). He demonstrated to his satisfaction that the drug administered by the intramuscular or intravenous route, exerted no depressant effect on either the full term or premature infant. The only untoward effects on the mother were encountered among the group of patients who were given the drug intravenously. With the exception of transient nausea in a fourth of the cases and occasional vomiting no side effects were observed when the drug was administered slowly; that is, if a minimum of two minutes by the clock was taken to inject 2 c.c. of solution containing 100 mg. of demerol.

Irving,[1] also reporting from the Boston Lying-in Hospital, found that complete or nearly complete amnesia was experienced in 70 per cent of 2,446 obstetric patients in labor who received demerol, as compared to 85 per cent of 14,676 patients who received the barbiturates. In both series scopolamine was used concomitantly. Irving expressed especial concern over the development of maternal pulmonary edema. He reported thirty-five cases in the barbiturate group with three deaths or an incidence of one case of pulmonary edema in 419 deliveries. There were two cases of pulmonary edema among the 2,446 cases in which demerol and scopolamine were given or an incidence of one in 1,223 deliveries. Sixty-two per cent of the babies of the patients who received barbiturates breathed spontaneously (without increase in mortality) and 82 per cent of the babies of patients who were given demerol breathed spontaneously.

In one series, the results of which have not been published, demerol was used in about 1,500 obstetric cases. For a short time, early in this study, the drug was available for oral administration only. When given in this way demerol seemed to be disappointing as an analgesic. Administered intramuscularly, however, after a small initial dose of 1½ to 3 grains (0.1 to 0.2 gm.) of barbiturate, it gave fairly satisfactory analgesia in the great majority of cases. The dose was repeated every three to five hours; however, a total dose of 400 mg. or more was seldom used. On occasions when the first dose of 100 mg. had little effect in from thirty to sixty minutes, a second dose was effective. No untoward maternal side effects were encountered. The purpose of the medication in this series of patients was to give a reasonable degree of analgesia rather than complete amnesia.

No definite deleterious effects were noticed on the infants delivered after the use of demerol in this series. A peculiar type of asphyxia, however, occurred about five or six times as follows: The baby was born with good color and cried lustily at once but was found in a few minutes to be pallid and not breathing. Such babies responded in a few moments to administration of oxygen and gentle stimulation and were subsequently normal. There is no mention in the literature of demerol causing fetal asphyxia and the occurrences just mentioned in only about 0.3 per cent of the cases mentioned cannot be attributed directly to the drug.

Demerol alone does not seem to maintain relief of pain for patients who are in hard labor as well as colonic ether or morphine does, but it lacks the depressant effect of these drugs. The spasmolytic action of the drug noted by those who studied demerol pharmacologically is not impressive from casual observation of patients in labor who have received the drug.

All in all demerol seems to be a welcome addition to the armamentarium of the obstetrician for relief of the pain of labor, especially because it seems reasonably devoid of deleterious side effects to the mother and apparently does not depress too much the higher centers of either the mother or the child.

Arthur B. Hunt, M.D.

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MEDICAL PREPAYMENT PLANS GIVEN THE "GO" SIGN

THE House of Delegates of the American Medical Association at its December, 1945, meeting instructed "the Board of Trustees and the Council on Medical Service and Public Relations to proceed as promptly as possible with the development of a specific national health program, with emphasis on the nationwide organization of locally administered prepayment medical plans sponsored by medical societies." The term "specific national health programs" might have seemed rather ambiguous, but a "nationwide organization of locally administered prepayment medical plans" made it clear that the House of Delegates wants the prepayment plans on county or state basis to be pushed as fast as possible and their activities co-ordinated by a national organization.

The report of the outcome of the meetings held in Chicago beginning February 13, 1946, appeared in an editorial in the *Journal A.M.A.* for Februray 23, 1946 (p. 494). The editorial restates, in a revised version, the attitude and purposes of the organized profession, and explains what the AMA intends to do about prepayment medical plans in general.

Many members of the profession may have had in the back of their minds that one huge national prepayment medical insurance company was in the offing. This is not the case. What, in brief, has happened is that the Council on Medical Service and Public Relations has established a Division of Prepayment Medical Care Plans, appointed a Director and necessary staff, has drawn up standards for state or county medical care plans and is ready to assist local, county or state medical organizations in establishing local prepayment insurance units to which the Council is ready to give its seal of approval.

State and County Medical Associations have therefore received the word "go" and should take the necessary steps to promptly extend the number and scope of the already existent prepayment medical insurance organizations sponsored by medical societies.

It is well for medical men to bear in mind that prepayment medical insurance plans require the services of businessmen trained in the insurance business. Fortunately, they are ready to aid to the point of taking over on a non-profit basis.

A number of national insurance companies for some years have provided hospital and medical insurance mainly for large groups of employes. The overhead on the writing of individual policies of this sort is high. Even the Blue Cross hospital insurance is largely limited to groups of employes and the same is true of at least some of the medical insurance sponsored by the profession.

Coverage in general is limited to surgical and obstetrical care and, to some degree, medical care in hospitals. This is a good beginning but such insurance should be expanded not only to provide single policies but to include all possible illnesses, catastrophic in character, for the employe's dependents as well as himself. There is good reason to believe that such coverage can be made available at a cost attractive to people of low income.

REPORT OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Chicago, December 3, 4, 5, 1945

The meeting was held at the Palmer House in Chicago, with 170 of the total number of properly credited delegates (175) present to make this one of the largest assemblies of representation the Association has had.

The report of the Council on Medical Service and Public Relations occupied fifteen pages of the program prepared for the AMA delegates. A supplemental report of equal size was submitted to the delegates during the session. Resolutions as approved by the House of Delegates will appear in the AMA *Journal.* The activities of the Council have been and will continue to be presented through the columns of *The Journal* and through the bi-weekly News Letter, which is mailed to AMA members desiring it.

Members of the Council have been studying problems confronting county and state medical societies, by holding sectional meetings with speakers chosen from local groups and from the central office. Dr. Joseph Lawrence, director of the Washington office, was included at all of the sectional meetings so that he might report and advise on Federal legislation affecting medical service.

To further crystallize the wishes of the profession, two conferences were held immediately before the annual meeting of the House of Delegates. The executive officers of the state medical societies were invited to participate in a round-table conference held at the Headquarters Office. At the conclusion of each conference, resolutions were prepared with instructions that the Council on Medical Service and Public Relations submit them to the House of Delegates of the AMA. The Council complied with their instructions. There were three chief topics for consideration. The first dealt with Federal legislation. The resolutions favored an approval of the Hill-Burton Hospital Bill, which is to provide additional hospital beds where local need is indicated. The Pepper Bill was opposed since it plans to extend the Emergency Maternity and Infant Care program beyond the war emergency and is drawn to provide medical care for children until they reach the age of twenty-one years. Resolutions opposed the President's compulsory health insurance program and the new Wagner-Murray-Dingle Bill, on the grounds that it was the first step to federal regimentation of medicine, that the program would lower the quality of medical service and, further, that a voluntary plan of prepayment medical care on a competitive basis would preserve private enterprise, encourage investigation and raise the quality of medical service. A 14-point program as shown in the December 1 issue of the AMA *Journal*, page 945, was adopted.

The second topic dealt with resolutions recommending that the House of Delegates go on record as favoring a voluntary national prepayment medical service. The delegates approved the instructions which were given to the Council on Medical Service and Public Relations, with the advice of the board of trustees, that such a plan be initiated immediately. At present the Council on Medical Service is exploring several possibilities and is planning to integrate the present existing groups of voluntary prepayment medical service as a nucleus for the National plan. The national organization will then extend into states where new plans are contemplated or where plans do not exist.

The third topic dealt with public relations, an educational program to be extended throughout the country. The first step is to have physicians and surgeons familiarize themselves with the problems of the employer, the employed and the self-employed persons, like the farmer, to learn how better medical service may be given. This is to be done by talking with the patients and helping them to understand the costs involved in providing the modern advantages of medical science and to realize that a voluntary prepayment medical service is less expensive and offers a higher quality of service than the compulsory insurance. It was recommended that the information be extended to leaders of each community.

An address by Major General Paul R. Hawley on the care of the veteran was heard. Dr. Hawley included in his talk a discussion of plans for aiding veterans not only on the local scale but on the national level as well. His talk, which met with the approval of the entire house, appears in the AMA *Journal*, December 22, 1945, page 1192.

It was announced that the next meeting of the House of Delegates will be held in San Francisco July 1-5, 1946, and that hotel arrangements have been completed with the San Francisco hotel association. It is hoped that the fact that the war is over will bring about an increased attendance.

Since 1947 will mark the one-hundredth anniversary of the founding of the American Medical Association, elaborate preparations are being made for the 1947 meeting to be held in June of that year in Atlantic City, N. J.

One of the state delegates offered a resolution to the effect that the Council on Medical Service and Public Relations should be the sole spokesman for the American Medical Association. The resolution was not passed, since it was the opinion of the assembly that a lesser body in the association cannot assume the spokesmanship which rightfully belongs to the House of Delegates.

A new section, to be called General Practice of Medicine, and to be distinguished from the Internal Medicine specialty, was approved for addition to Scientific Assembly.

An important topic of discussion was the recent gift to the American Red Cross by the Army and Navy of 1,250,000 units of dried blood plasma which are being redistributed to all the states in the Union through the individual departments of health. Further discussion of this project will be found in MINNESOTA MEDICINE.

The Delegates to the American Medical Association wish to recommend that members follow carefully the Washington Letter and the Medical Legislation Program in *The Journal* of the AMA.

Results of the election of officers were as follows:

President-elect: Dr. H. H. Shoulders, Nashville, Tenn., Speaker of the House for the last two years.

Speaker of the House: Dr. R. W. Fouts, Omaha, Neb.

Dr. L. A. Buie has been elected to the Judicial Committee and Dr. A. W. Adson has been re-elected to the Committee on Medical Service and Public Relations.

It was learned at the meeting that Dr. George F. Lull, formerly deputy Surgeon General of the United States Army Medical Corps, has been appointed Associate General Manager of the AMA. He began work in his new position on January 1.

A. W. ADSON, M.D.
W. A. COVENTRY, M.D.
E. W. HANSEN, M.D.
F. J. SAVAGE, M.D.
Delegates to the American Medical Association

CANCER DETECTION CENTERS AND ALLIED CANCER PROJECTS

ARTHUR H. WELLS, M.D.
Chairman of the Committee on Cancer

At a recent meeting of the Committee on Cancer, the standards, rules, and regulations, and the means of establishing Cancer Detection Centers in Minnesota were considered—in line with the program approved by the American Medical Association at its House of Delegates meeting in December and by the Council of the Minnesota State Medical Association at its December 16th meeting. This program is a co-operative venture between the Minnesota Cancer Society and the Minnesota State Medical Association and its component county societies, the Cancer Society underwriting the cost of the clinics where desired, and the medical profession initiating, directing and staffing the clinics. Increasingly large sums of money are being collected by the Minnesota Cancer Society, allotments of which are being made available for County Medical Society cancer projects.

For many years the activities of the American Cancer Society were largely limited to a program of cancer education and cancer research. However, it became increasingly apparent that this program was not complete, and that there was a great need for service to the patient. There developed, as a recognition of this need, the formation of the Service Division of the American Cancer Society. This Service Division is governed entirely by practicing physicians, with representatives from the American Medical Association, the American College of Surgeons, and the American Roentgenological Society. The Service Division is responsible for all projects concerning the patient as a patient, and includes the following specific functions: (1) survey of needs, (2) detection, prevention, or well-person clinics, (3) diagnostic clinics, (4) treatment centers, and (5) care of advanced cancer patients. The American Cancer Society, or its State or local divisions, may not own or operate any clinic, laboratory, hospital, or other facility for the care of cancer patients. The Cancer Society is a benevolent pressure group acting under the constant advice of physicians. All cancer projects financed or aided by the Cancer Society must have the approval of the County and State medical groups.

Three sets of standards, rules and regulations are to govern the establishment and maintenance of Cancer Detection Centers: (1) those of the American Medical Association, (2) those of the State Cancer Committee, and (3) those developed by local County Medical Societies.

The following American Medical Association principles of operation of Cancer Detection Centers are reviewed:

1. Definition: A cancer detection, cancer prevention, or well-person clinic is designed to detect abnormalities, not producing symptoms sufficient to send the patient to the doctor. These clinics do not diagnose or treat diseases.
2. No such clinics shall be established in any community without the approval of the County Medical Society.
3. The examination shall be as complete as local facilities will permit with the exception of biopsy. In all instances this examination shall include a complete history and physical examination.
4. Records may be as complete as desired. They shall in all instances include the abnormal findings.
5. If abnormalities are detected, the patient shall be referred to the family physician for diagnosis and treatment. If there is no family physician, the patient shall be referred to a physician or clinic selected by the patient from a group chosen by the County or State Medical Society. Such reference shall include a complete report of the screening examination.
6. One month after such reference to a physician, the case shall be followed up by letter or social service visit and a complete report of the diagnosis and treatment shall be obtained.
7. Cancer Detection Centers must be located in hospitals approved by the American College of Surgeons.[1]

The policies recommended by the State Committee on Cancer follows:

1. A Cancer Committee shall be appointed in each interested County Society.
2. The Chairman of the Cancer Committee of each County Society shall be charged with the responsibility of interesting hospital authorities and hospital medical staffs in his community in setting up clinics. He is also responsible for maintenance of standards in established clinics.
3. The hospital staff shall select a special committee to be responsible for setting up the clinic—to determine how much space is needed, how much money from the Minnesota Cancer Society will be needed to finance the project, to select the personnel and physicians to staff the clinic and to assign their duties.
4. The Minnesota Cancer Society shall provide uniform medical history and physical examination forms to be drafted by the State Committee on Cancer for the use of examining physician. This Society shall also provide advertising, clerical help, and telephone facilities for aiding in arrangement of appointments, receptionists, and the maintenance of records, as requested and approved by the County Medical Society or its Cancer Committee.
5. The local County Medical Society must approve of every clinic before it is established.
6. Clinics shall be free to all persons coming in for examination.
7. A nurse may be employed to take the preliminary case history, but this must be checked and enlarged upon later by a physician.
8. An internist and a surgeon shall examine each individual patient for cancer, its precursors, or other ailments, with particular attention to the more common and accessible sites of cancer.
9. Physicians shall donate their services without charge.

At the outset, it is hoped that trial clinics will be set up in the three largest cities: Minneapolis, Saint Paul and Duluth. However, as soon as it is practical and

(Continued on Page 293)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

ORGANIZED AGITATION FOR SOCIALIZED MEDICINE TOUCHED OFF AT CONFERENCE

Using Minnesota as trial ground, proponents of a program of federally-administered compulsory health insurance got together for a "Health Workshop" Conference in St. Paul at the Lowry Hotel February 6 through 9. At closed sessions leaders in the National Farmers Union, the American Federation of Labor, the Congress of Industrial Organizations and the Railroad Brotherhoods, met to find the most effective way of spreading the gospel of national health insurance.

Delegates were invited in from Minnesota, Wisconsin and the Dakotas to "unite and demand the political action necessary to improve this nation's health care and standards."

Conference Turns Out "Technical Consultants"

During the four-day sessions, confined to representatives of the sponsoring unions, the delegates were briefed and provided with folios of information so that they might go back to their home states as "technical consultants" and set up interim committees for the purpose of educating the people to the need for improving health facilities. It is hoped apparently that as a result of a carefully planned campaign of education, the program for socialized medicine might gain favor and that more people would put pressure on elected officials to support legislative measures of the Wagner-Murray-Dingell brand. It was decided at the meeting that there will be a series of follow-up meetings, comparable to this one, which will take in more localized groups.

Some of the speakers were loudly critical of the medical profession; others tempered their comments. A couple of the speakers were outspoken in their praise. It was voted to invite the representatives of the medical, dental and allied health professions to sit in and be heard at the follow-up meetings in the various states.

National Farm Union President Sounds Keynote

James G. Patton of Denver, president of the National Farm Union, made the keynote address on the evening of the eighth. His punch lines were that President Truman's five-point program, submitted to Congress last November, was fine, but not drastic enough, and that it was high time the "working" farmers and "working" laboring men took political action to insure a "progressive program across the board to guarantee every man, woman and child needing it a free education, free medical care and a decent standard of living."

Obstructionists, such as congressmen and governors, who are against social legislation, said Mr. Patton, must be done away with. Throughout his talk, Patton stressed that the program being launched at the conference was to be one of action. "The lack of medical care," he declared, "is going to be ended *now* and not 25 years from now!"

This health workshop conference was planned back in June of last year, when Mr. Patton and Surgeon General Thomas Parran met at Washington. At that time the facilities of the U. S. Public Health Services were offered to further a universal program for adequate health care for all people with the emphasis on those in the $1,000 or less income bracket, *provided* that other federal agencies in the health field would also cooperate in the venture.

Present at the health workshop conference to help work out the details of the health education program were specialists from various governmental agencies, including the Department of Agriculture, the U. S. Public Health Service, the Federal Housing Agency, the Social Security Administration and the Department of Labor.

SOCIAL SECURITY COSTS IN U. S. RISING RAPIDLY

With the government providing more and more services to citizens, the cost of the social security program in this country is rising steadily. Not that this increased spending is all the result of an actual improvement in services offered—the lion's share of the social security budget is being turned over to the thousands of employes in the bureaucratic honeycomb.

The latest service which some would delegate to the government is that of providing health insurance, such as is called for in the Wagner-Murray-Dingell Bill. And although no tax provisions are emboided in the context of the bill, it stands to reason that the program will have to be financed through an additional tax burden on the American people, all of which will contribute another substantial hike to the cost of social security.

This is the social security picture today—a large and ever-growing financial drain on the budget by bureaucrats, plus the prospect of a large additional drain.

According to conservative estimates, it would take at least 600,000 additional salaried government employes to administer the compulsory health insurance program of the Wagner-Murray-Dingell Bill. This army of bureaucrats will draw on an average of $3,000 a year each, according to the present average federal salary scale.

According to Representative Charles W. Vursell (Illinois, Republican), there are now a total of 1,141 bureaus in the federal government, which employ 3,649,383 persons. By adding the salaries of the workers who will be needed to manage a federal health insurance program to the present huge payroll, an estimate can be obtained of what the total costs will be should the Wagner-Murray-Dingell Bill become law.

HEALTH BENEFIT PROGRAMS ESTABLISHED THROUGH COLLECTIVE BARGAINING

During recent years, an increasing number of unions are having health benefit plans included in the terms of their agreements with employers. A report of this development, summarized in the August, 1945, *Monthly Labor Review*, published by the Bureau of Labor Statistics of the U. S. Department of Labor, indicates a significant trend in labor circles toward making medical coverage a part of negotiated contracts. Some of the more recent health benefits have been negotiated in lieu of wage increases which could not be obtained under the wartime wage stabilization program.

Details of three types of health benefit programs, determined by their method of administration, are set forth in the article: those administered entirely by the unions, those administered jointly by union and employer, and those administered through private insurance companies with the insurance company assuming responsibility for eligibility of claims and payment of benefits.

In the main, health benefit plans provided under union agreements include weekly disability benefits usually ranging from 50 to 60 per cent of regular earnings; many plans provide surgical benefits ranging from $100 to $175; and hospital expenses ranging from $4 to $5 a day for 31 days, are usually allowed for any one continuous disability. A few plans allow specified payments for doctors' services up to a maximum of 50 visits for any one disability, which usually begins with the first treatment in the case of accident and the fourth, in case of illness. As might be expected, benefits tend to be higher under plans negotiated in industries having relatively high wage scales.

According to the article, the enlarging of health-benefit programs to cover more workers and provide more services, and the solving of administrative difficulties, such as the problem of the length of time to be covered during temporary lay-offs, seasonal slack periods and leaves of absence, remain to be worked out in future negotiations.

AMERICAN ACADEMY OF PEDIATRICS EVALUATES PEPPER BILL

After carefully evaluating the Pepper Bill, the "Maternal and Child Welfare Act of 1945," which would provide grants by the federal government to the states for providing medical services to mothers and children (up to the age of 21), the American Academy of Pediatrics has adopted a resolution setting forth specific criticisms of the bill.

The first criticism which the Academy notes is that the bill as now written states that services and facilities furnished under the state plans are to be available to all mothers and children who elect to participate in the benefits and therefore denies the states' rights to determine eligibity.

The Academy of Pediatrics does not favor the use of federal funds for those able to provide medical care from their own resources.

The Academy notes further that the bill excludes fee-for-service as a means of paying practitioners for their services, makes inadequate provision for paying groups of physicians or institutions for professional services and does not prevent professional personnel groups or institutions from accepting supplemental payments.

Issue is taken with the endorsement by the bill of the Children's Bureau as the administrative agency of the National Health program, as outlined, without the proper assurance of the program's integration with other health activities of the federal government.

Issue is taken also with the definition of federal or state advisory committees as regards personnel, method of appointment, advisory and policy-making roles or manner of giving authority to the record of consultations with and recommendations to the administrators.

It is noted that no provisions are made for varying the remuneration for services according to the differing costs from state to state; nor is there any provision for the prevention of arbitrary requests on short notice by the federal administrative agency for reports from the state health agencies or from the practitioners. The provisions for handling claims are unsatisfactory as are the specifications regarding adequate dental care.

Research and Education Not Provided For

The Academy feels that one of the most serious errors of the bill is that it fails to make adequate provision for the protection of the well-organized teaching services and for the support and encouragement of research pertaining to the improvement of maternal and child health services and medical care. On these, the Academy states, the future of the quality of medical care is dependent.

The final criticism is aimed at the lack of assurance in the bill that state plans shall not expand too rapidly for the available administrative and professional personnel and resources. For these reasons, the Academy concludes in its resolutions, the Maternal and Child Welfare Act of 1945 does not represent the best forms of legislation for the purpose for which it was written.

For those considering proposed legislation, the Academy directs attention to its fact-finding study of child health services, now in progress, which at its conclusion, should assist in the development of sound programs at state levels based on demonstrated needs.

Pending the completion of this study, it is recognized that urgent need exists in some states that should be met immediately. To this end the Academy recommends that additional federal funds be made available for grants-in-aid to the states under existing Maternal and Child Health and Crippled children's programs under the Social Security Act.

FELLOWSHIP GIFT RECEIVED

A gift of $25,000 to the University of Minnesota Medical School has been received. The money is to be used to provide five graduate medical fellowships of $1,000 a year each, covering a five-year period.

Veterans of World War II are to receive the fellowships, which may be used for study in any recognized field of medicine.

AERIAL CLINIC IN ALASKA

In Alaska where "everybody flies" among the air-age projects under way is the establishment of an aerial medical clinic. Doctors and dentists are outfitting a plane with x-ray equipment and equipment for minor surgical work. The medical men don't intend to perform major operations on the spot; instead, when necessary, the patients are to be flown to the nearest town with hospital facilities.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

TO THE MEMORY OF MAX WILLIAM ALBERTS, M.D.

We were all shocked to learn that one of our members, Dr. Max Alberts, died suddenly at the age of forty-five from a coronary lesion, on June 11, 1945. Though we were aware of the fact that he had been annoyed by precordial distress, none of us appreciated his critical condition, nor did Doctor Alberts permit himself to be an invalid. On the fatal day, in spite of pain, he reported at the hospital, performed a laparotomy and succumbed on his way home while driving his car.

Max, as we all knew him, had served with us as a member of the State Board of Medical Examiners for a period of eleven years, beginning his service on May 9, 1935. During this time we had learned to know him, both professionally and socially. Professionally he had made satisfactory progress. He was liked by his colleagues and developed an enviable surgical practice. His decisions on the Board were fair. He showed his understanding of human frailties by being inclined to soften or lessen the maximum penalties for violators of the medical codes and laws.

Max gave generously of his time to medical affairs and served on numerous city, county and state committees. He took his professional work very seriously, but he did enjoy relaxing. He appreciated his social contacts, enjoyed discussing sports and politics, on both of which subjects he was well informed.

Though Max's demise is our loss, it is not comparable to the loss experienced by his wife, son and daughter. We have lost a colleague, a regular guy whom we shall always remember; they have lost a husband and father who loved his family and whose family loved him. Max has not lived in vain.

MINNESOTA STATE BOARD
OF MEDICAL EXAMINERS.

Minneapolis Ex-convict Sentenced to One Year Term for Violating Basic Science Law

State of Minnesota vs. Harry C. Chappell

On February 8, 1946, Harry C. Chappell, forty-eight years of age, 2239 Cole Ave. S.E., Minneapolis, was sentenced by the Hon. Arthur W. Selover, Judge of the District Court, to a term of one year in the Minneapolis Workhouse. Chappell was sentenced for representing himself as a doctor in violation of the Minnesota Basic Science Law.

Chappell was arrested on February 6, 1946, by Detectives Lillejord and Henseler of the Minneapolis Police Department following an investigation by Inspector Bernath and Captain Mullen of the Minneapolis Police Department, and representatives of the State Board of Medical Examiners. Chappell, who has no medical training of any kind, had telephoned at least two women who had inserted advertisements in the Sunday *Minneapolis Tribune* of February 3, 1946. The women were seeking stenographic work and Chappell, in answering the advertisements, stated that he was a doctor and that he was about to open an office in the Masonic Temple Building, Minneapolis. One of the applicants went to Chappell's home address where he insisted that she submit to a physical examination as a prerequisite to being given employment. The applicant objected to a physical examination on the ground that she had been examined by her family physician in December and found to be in good health. Chappell insisted on the physical examination and had the applicant remove her clothing. Following the examination the applicant informed her parents of what had taken place and the matter was immediately reported to the Hennepin County Medical Society and to the Minnesota State Board of Medical Examiners.

Chappell has a long criminal record dating back to June, 1922, at which time, he pleaded guilty in the District Court of Hennepin County to robbery in the third degree. For that crime Chappell served a term in the St. Cloud Reformatory. In May, 1930, Chappell was sentenced to a five-year term in the North Dakota State Prison for burglary in the third degree. He served three years and three months of that sentence. In March, 1934, Chappell was sentenced to a term of two to fourteen years in the District Court of Ramsey County, Minnesota, for the crime of indecent assault. Chappell served nine years of that sentence.

In June, 1944, Chappell was sentenced in the District Court of Hennepin County to a term of one year in the Minneapolis Workhouse for attempted carnal knowledge involving a fifteen-year-old girl. Chappell stated, when questioned by Minneapolis Police officers, that his only occupation outside of serving more than twenty years in various prisons, was that of a bell-hop at several Minneapolis hotels. Chappell admitted that he had no intention of attempting to practice medicine and attributes his present difficulty, as well as two of his previous encounters, to "liquor and sex."

Michigan Physician's Minnesota License Revoked

Revocation of the License of Elmer J. Hagenbaugh, M.D.

The Minnesota State Board of Medical Examiners, at its regular meeting on February 8, 1946, revoked the license to practice medicine held by Elmer Jasper Hagenbaugh, M.D. Dr. Hagenbaugh was convicted on May 10, 1945, of the crime of manslaughter, in the Circuit Court of Calhoun County, Michigan. The criminal charge followed a criminal abortion performed by Dr. Hagenbaugh. Dr. Hagenbaugh was sentenced to a term of five to fifteen years in the Michigan State Prison at Jackson, Michigan, and is serving his sentence at the present time. Dr. Hagenbaugh was found guilty by the Board of immoral, dishonorable and unprofessional conduct in connection with the Michigan offense.

Dr. Hagenbaugh was practicing at Athens, Michigan, at the time of his conviction. On August 11, 1944, Dr. Hagenbaugh was convicted in the Superior Court of Elkhart County, Indiana, of the crime of abortion and was sentenced to a term of not less than three, nor more than fourteen years in the Indiana State Prison and fined the sum of $1,000. Upon the payment of the fine the Court suspended the prison sentence. Shortly thereafter Dr. Hagenbaugh moved from Elkhart, Indiana, to Athens, Michigan.

Dr. Hagenbaugh was born at Sherwood, Michigan, in 1864. He graduated from the Toledo Medical College in 1905, and was licensed in Minnesota, in 1909, by reciprocity with Illinois. Dr. Hagenbaugh practiced medicine for a short time in 1909, at Rochester, Minnesota, and then moved to Elkhart, Indiana.

License of Minneapolis Physician Suspended for Five-Year Term

Revocation of the License of Harold E. Harbo, M.D.

On February 8, 1946, the Minnesota State Board of Medical Examiners suspended, for a period of five years, the license to practice medicine held by Harold E. Harbo, M.D., who formerly maintained an office at 4 West Lake Street, Minneapolis. Dr. Harbo was found guilty by the Board of immoral, dishonorable and unprofessional conduct in connection with an abortion performed on a thirty-two-year-old unmarried Minneapolis woman in April, 1945.

An investigation was commenced by the Minnesota State Board of Medical Examiners when it was learned that the patient was hospitalized with an infection following the alleged abortion. The patient gave a statement in which she claimed that she consulted Dr. Harbo for the purpose of having him perform an abortion upon her and that he advised her to get a room and that he would have someone come to the room for the purpose of doing the abortion. The patient stated she paid the sum of $150 but declined to identify Dr. Harbo as the person who came to her room and performed the abortion. Dr. Harbo appeared in person before the Board and admitted that he performed the abortion.

Dr. Harbo was born at LaCrosse, Wisconsin, in 1892. He graduated from the University of Minnesota in 1921 with a Bachelor of Medicine Degree. He received his Doctor of Medicine degree in 1922. He was licensed in Minnesota by examination in 1921.

Minnesota Academy of Medicine

Meeting of December 12, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 12, 1945. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. A. G. Schulze.

There were forty-six members and two guests present.

Dr. E. M. Jones read the following memorial to Dr. Max Alberts and a motion was carried that this be spread on the minutes of the Academy and a copy sent to Dr. Alberts' family.

MAX WILLIAM ALBERTS
1899—1945

Max William Alberts was born at Berlin, Wisconsin, October 28, 1899. He attended the public schools at Berlin, Wisconsin, before entering Ripon College where he received his preliminary college work. He entered the Medical School at the University of Minnesota and received his degree in Medicine in 1923.

He served his internship at St. Joseph's Hospital of St. Paul, Minnesota, and on completion of this service, became associated with Dr. W. C. Carroll in Saint Paul as surgical assistant.

In July 1925, he married Lola Schultz, who, with two children, a son, William, and daughter, Mary, survive.

Dr. Alberts always exhibited a most sincere interest in Medicine and took an active part in the proceedings of the medical societies to which he belonged. He was a member of the American Medical Association, the Ramsey County Medical Association, and the Minnesota State Medical Association. He was also a member of the Western Surgical Association, the American College of Surgeons, the Minnesota Academy of Medicine, and the St. Paul Surgical Society. He was a member of the Minnesota State Board of Medical Examiners, a clinical assistant in Surgery on the Medical Staff of the University of Minnesota, and was on the Board of Trustees of Ripon College.

Dr. Alberts had no particular hobby, but he was very much interested in sports, especially baseball and football, and had many close friends among the coaches and players.

Dr. Alberts was a tireless worker, and was always willing and ready to lend a helping hand when necessity arose. His confreres in St. Paul and the members of the Minnesota Academy of Medicine have lost a good friend and a good surgeon.

The election of officers followed and the following were elected to serve for the year 1946:

President .... Dr. S. E. Sweitzer, Minneapolis
Vice President ...... Dr. E. M. Hammes, Saint Paul
Secretary-Treasurer .... Dr. A. E. Cardle, Minneapolis

The scientific program followed.

THE SIGNIFICANCE OF BLEEDING FROM THE RECTUM

JAMES K. ANDERSON, M.D.
Minneapolis, Minnesota

Bleeding from the rectum is one of the commonest complaints presented by the patient consulting the proctologist. Mummery,[4] in various articles, states that bleeding may result from almost any bowel complaint, and that mistakes and difficulties in diagnosing the source of bleeding from the rectum are many; in fact, more frequent than in other forms of hemorrhage. To the patient, bleeding from the rectum usually means one or two things—hemorrhoids and cancer. Too often the diagnosis of hemorrhoids is accepted by the physician without further investigation and this is one of the common pitfalls in diagnosis or lack of diagnosis that we see in malignant lesions of the rectum and rectosigmoid. A noticeable number of individuals with malignancy coming into our office have been subjected to a hemorrhoidectomy during the preceding few weeks or months, because of bleeding from the rectum; these patients had hemorrhoids as well as another lesion.

Sources

The sources of blood passed by rectum are multiple as well as the lesions responsible for the bleeding.

Any ulcerative, proliferative, or inflammatory lesion of the mucosa of the bowel may be the source of the blood, and blood may come from any portion of the alimentary tract. It is fairly easy to distinguish blood coming from the small intestine, as this blood is partly digested in the intestine and will be dark or have the ordinary characteristics of melena, although I have seen two patients with severe hemorrhage from the rectum from a gastric or duodenal ulcer, where the blood passed was bright red and in bright red clots, having come through the entire tract in a very short time. Blood coming from the large intestine is not so easily diagnosed as it is often little changed in characer and may be confused with blood originating in the rectum. As a rule, however, it is mixed with stool and mucus and is not so bright. Any blood remaining long in the colon or rectum becomes dark.

Blood coming from lesions in the rectum, carcinoma, polyps, ulcers, internal hemorrhoids, is usually bright red and not mixed with stool. Hemorrhoidal bleeding usually comes with and after the stool is passed, but internal hemorrhoids may be irritated or abraded by the passage of the stool and this blood accumulates in the rectal ampulla to be passed some time later in a changed, clotted and darkened form and so suggests blood from higher in the tract.

Thesis read before the Minnesota Academy of Medicine.

Severe hemorrhage from diverticulitis is fairly common. In my experience, the blood passed is thin and dark, not clotted, and in some quantity. These hemorrhages come suddenly and may be serious but usually are self-limiting and come in attacks. At times the bleeding is preceded by dull colonic pain. These patients are usually over 40 and obese. Diverticulosis occurs in about 5 per cent of individuals over 40.

Nothnagel's[5] table, made many years ago, gave the common causes of rectal hemorrhage as: hemorrhoids, dysentery, typhoid and carcinoma. He stated that small quantities of pure blood either light or dark suggested the rectum or sigmoid as the source. When blood forms a coating on the stool, the cause is in the lower part of the bowel. On the other hand, if the blood is mixed with the stool, the source is probably high and from the small bowel.

Landsman[3] states that the presence of a constitutional disease of some nature has a decided bearing on the possibility of bleeding from the rectum, notably tuberculosis, syphilis and hepatic disease. Primary tuberculosis is very rare, but secondary infection from the lungs is common. In 1230 autopsies in the Royal Victoria Hospital, but two gave evidence of primary involvement in the bowel, while 285 were secondary to tuberculosis elsewhere. Syphilis may involve the lower portion of the intestinal tract as chancre, or in its secondary or tertiary manifestations as mucous patches, condylomata, fissures, ulcers, proctitis, gummata, and strictures, besides congenital syphilitic lesions principally of the anus which give rise to ulcerations. Of these, chancres and gummata are infrequent; the others are fairly common. Hepatic disease, though rare, may be a fruitful source of rectal bleeding because of its mechanical and other effects in bringing about pathological conditions of the rectum.

Hence, the character of the blood expelled is not so important as was formerly taught. Merely because the patient loses blood from the rectum is no proof that the source of it is in that organ. It may come from any part of the intestinal tract and its color is by no means infallible evidence of its origin despite the fact, which is often accepted, that if the blood is dark it comes from high up, whereas if it is red, the lesion which causes it is low down. Blood coming from high up is indeed dark, clotted and otherwise altered, but only if retained in the bowel a sufficient time. If it is expelled before these changes have had time to occur, it will be bright red. Conversely, blood from low down may be retained in the rectal ampulla long enough to become dark and possess all the characteristics of blood coming from higher up. We may even have at times both liquid and clotted blood from the same lesion at the same time, whether situated high or low, thus tending further to confuse the issue. So, we cannot draw any positive conclusions from this circumstance until the findings have been confirmed by more reliable data, a careful history, and proctoscopic and x-ray examinations.

Postoperative bleeding or hemorrhage following anorectal surgery occurs in a small percentage of cases. This is usually due to a slipped suture if within twelve hours, but may occur up to fourteen days due to slough and vessel erosion, and prove embarrassing. The diagnosis and treatment is evident.

Chronic ulcerative colitis is one of the common lesions producing bleeding. This bleeding may be slight or profuse, is usually thin and mixed with stool and mucus, and accompanied by frequency of movements. Amebic and bacillary dysentery are also seen and give somewhat the same symptoms. Factitial proctitis is commonly seen following radium implantation in the cervix. This lesion is seen on the anterior rectal wall as a telangiestasis. The bleeding from this lesion may be brisk but is usually noted in small amounts in the stool.

In cases of hemorrhage from the rectum, the expelled blood should be examined soon after its passage, if possible, and before further chemical changes have occurred. This may give some indication of the source.

Quantity

The quantity of blood lost depends in great measure upon the size of the lesions, its character, and the extent of the destructive process. Carcinoma of the colon or rectum, multiple polyposis, ulcerative colitis, the dysenteries, and diverticulosis, show extensive areas of involvement and the pathological process inclines to deep destruction rather than to spontaneous recovery; hence, bleeding from such sources is naturally more severe and persistent, and the expelled material more often contains an abundance of mucus, pus, and pieces of tissue, in contradistinction to such innocent causes as hemorrhoids, single polyps, prolapse, et cetera, in which the blood will be found to be unmixed and show no products of tissue destruction. These lesions may also cause interval bleeding. It may be accepted, then, in a general way, that mixed blood points toward serious conditions, though the converse of the proposition does not invariably hold true, for unmixed blood does not necessarily predicate benign lesions.

When there is any pathological condition of the bowel which has a tendency to bleed, any increase in the intra-abdominal pressure, due to straining, vomiting, or defecation, may initiate it. However, the sudden appearance of a large hemorrhage, without any previous history of rectal disturbance and independent of any bowel movement, is quite characteristic of some cases of carcinoma of the rectum. One occasionally obtains a history of a similar onset in hemorrhoids or polyps, but close questioning will nearly always reveal a distinct interval history of rectal symptoms preceding the hemorrhage.

Perverted function of the bowel and any co-existing bleeding have a definite relationship to each other. When there is persistent constipation, the force and straining required to expel the stool are liable to cause injury to the mucous membrane, aside from any medical or chemical means used to help secure an evacuation. In an impaction the same factors operate with the further addition of a possible necrosis due to pressure of the hard, dry fecal masses on the delicate mucous membrane. When the stools are abnormally frequent, they are likely to contain blood from the lesion which causes the diarrhea, if not from the straining and tenesmus set up by the discharges.

Zobel[6] states that bleeding from gastric and duodenal ulcers and cancers is the usual cause of tarry stools. But these may also follow severe hemorrhages from the nares, lungs, esophageal varices, or typhoid ulcerations. Portal obstruction from any cause, acute yellow atrophy of the liver, purpura, hemophilia, leukemia, aneurysm, mesenteric thrombosis and scurvy may also be causes. Carcinoma of the colon seldom produces profuse hemorrhage and hence not tarry stools, but gross and occult blood.

Profuse bleeding originating in the rectal ampulla is usually from an ulcerating carcinoma of the rectum or rectosigmoid, a detached polyp, or sloughed hemorrhoid. The passed blood is bright and may contain clots mixed with stool.

There is a group of lesions and diseases of particular interest to the internist in which there is bleeding from the rectum in varying amounts and color, either free or mixed. They are: gastric and duodenal ulcers, yellow fever, septicemia, endometriosis with rectal involvement, pyemia, malaria, dengue, typhoid, jaundice, abdominal injuries, intestinal hemorrhages not due to tuberculous ulceration but to tuberculous pulmonary disease, sudden diarrheal attacks with bloody mucus which occur in exophthalmic goiter, arsenic and phosphorus poisoning, cancer of the small intestine, intestinal parasites, sclerosis of the intestinal vessels, chronic nephritis and acute enteritis.

The most common causes of bleeding from the rectum in children are polyps, prolapse and anal fissures, although well-developed hemorrhoids are occasionally seen. Proctitis, colitis, and intussusception also cause bleeding. Blood and mucus passed by a child under one year of age is almost diagnostic of an intussusception. Foreign bodies (thermometers, pencils, et cetera), introduced into the anus, are also fairly common causes of trauma and resulting bleeding. Meckel's diverticulum must also be considered, the blood in this case being dark and mixed with stool.

Diagnosois

The diagnostic problem involved in bleeding from the rectum is based on an adequate history and careful anoscopic, proctoscopic, and roentgenologic examination.

I feel that the examination should begin from below, with a digital examination followed by a short anoscope—the type with which the physician is familiar; then the electrically lighted proctoscope inside for at least 20 to 35 cm., if possible, examining every inch of the mucosa and looking behind the valves of Houston. In many cases, due to angulation or spasm, it is impossible to examine farther than 16 to 18 cm. without anesthesia. If blood is seen to be coming from beyond the proctoscope, or no source of bleeding is found for the distance examined, a barium enema is indicated which may reveal polyps, carcinoma, or diverticulosis. The openings of rectal and low sigmoidal diverticula are occasionally seen. If proctoscopic examination and barium enema are negative, a gastro-intestinal study is necessary. X-ray examination for carcinoma of the rectum is often misleading. These instrumental examinations are not difficult if proper equipment is on hand for the removal of blood and any liquid stool found in the bowel, and certainly should be done where any blood is passed. The more common cases of bleeding will be diagnosed and the more obscure ones will be gradually approached by the process of elimination. Individuals with severe hemorrhage may be proctoscoped at once if the general condition permits, but the roentgen examination may have to be postponed until the bowel can safely be prepared properly by catharsis or enemata. Fortunately, in most of these cases the bleeding will stop of its own accord and in a few days will permit a complete study. Recurrence, of course, is most likely.

I would like to cite a case of a rather unusual type of rectal hemorrhage which came under my care.

This man, aged forty, a traveling salesman, was out in the western part of the state. Following a bowel movement he passed considerable bright red blood and reported to a local physician who examined him and gave him some suppositories. He started to drive east and at several towns stopped at toilets and each time passed only bright blood in some quantity. He also visited several other physicians who gave him similar treatment.

I saw him about six hours after the bleeding had started and he again had a rectum full of bright blood. This was removed by suction and I could see the stump of a polyp in the rectal ampulla with a pulsating vessel. On close questioning, he stated that he had felt something protrude from the anus at the time he had first noted the blood and when he wiped himself he felt something snap and noted a piece of meaty tissue on the paper. The pulling off of a pedunculated polyp or adenoma may often happen, but this is one case that was very definite and might have proved tragic.

I would also like to report one typical case of severe hemorrhage from the bowel as the first evidence of a rectal carcinoma.

This man, aged fifty-seven, on September 18, 1943, had three severe hemorrhages from the rectum. These, of course, frightened him and he reported for examination. On close questioning, he admitted that for several months he had noted a red stain in the toilet bowl but never any gross bleeding. There had been no weight loss, but some bowel habit change. He also knew that he had hemorrhoids and had considered these the source of the bleeding.

Treatment

Surgical treatment is indicated in the majority of these cases to remove the source of the bleeding, whereas others require medical treatment, rest and diet.

Summary

In summary, I would say that bleeding from the rectum is a common symptom. Lesions and diseases are multiple. Diagnosis may be evident or very difficult to establish. Careful history, ocular and x-ray examinations will usually reveal the cause. Hemoglobin estimation will reveal the extent of the blood loss.

A plea is made for careful proctoscopic examination of the rectum and rectosigmoid, especially when hemorrhoids or evident anal pathology which commonly causes bleeding exists, and a complete gastro-intestinal study with the x-ray when lesions are not found by ocular examination.

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Discussion

Dr. L. G. Rigler, U. of M.: It may seem paradoxical for a roentgenologist to agree with Dr. Anderson about the lack of accuracy in the roentgen examinations of the rectum. I am amazed at how many patients are sent in for a barium enema study without previous proctoscopic examination when a lesion in the rectum is suspected. It is an extremely difficult thing to demonstrate such lesions and roentgen diagnosis is in doubt because this is one portion of the colon where a good filling is not obtained. There are, of course, a few cases in which proctoscopy and sigmoidoscopy are impossible and there even rectal examination is doubtful, but aside from these, when one is dealing with a lesion within reach of the proctoscope or the finger, I think it is better to get the direct determination of the lesion rather than by an indirect procedure such as with the roentgen examination.

Determination of a source of bleeding from the gastro-intestinal tract is one of the most difficult things we have to encounter. I don't know whether it is commonly realized how many patients there are in whom the source of bleeding is never ascertained and that includes the autopsy examination. One of these sources which is difficult to explore is the small intestine and lesions, therefore, are commonly overlooked in this area. In those cases in which there is persistent blood and all of the usual examinations are negative, including x-ray studies of the stomach and duodenum and colon, a very vigorous effort to investigate the small bowel should be made. I am sure that some of my most flagrant errors have been in this field of endeavor. In recent years we have been using the so-called small intestinal enema—a tube is introduced into the duodenum and 1000 c.c. of barium mixture is quickly put into the small intestine through this tube. A sufficient distension and visualization of the small bowel is produced in this way so that gross lesions at least can readily be determined.

I am sure that every radiologist has a feeling of comfort about the lowel bowel if there is a proctologist available so that he can determine some of the things which it is difficult to elucidate by x-ray examination.

Dr. E. M. Jones, Saint Paul: A few years ago I saw a man forty years of age, who presented a clinical picture typical of acute diverticulitis of the sigmoid. He had a temperature of 101°, leukocytosis, with pain and tenderness in the lower left abdomen. He also had rectal bleeding. He was hospitalized, and after a few days an x-ray examination of the colon revealed diverticulitis of the sigmoid.

About a week after admission, a proctoscopic examination was made, and no source of the rectal bleeding was found. The patient insisted on leaving the hospital, but he was advised to return for another x-ray study of the colon.

A few months later I was called to see him again and found that he had been operated upon, and, because of the extent of the lesion, a colostomy was the only thing that could be done.

I cite this experience to emphasize the necessity of being most suspicious of the presence of malignancy when there is bleeding from the bowel, even though the clinical picture is that of an inflammatory process.

Dr. Anderson, closing: The only thing I would like to add is that I had two slides made to use in this discussion. I appreciate the discussions of the men this evening.

These slides show the common and less common lesions producing rectal bleeding.

Lesion Producing Rectal Bleeding

Less common:
- Submucous lipoma
- Submucous fibroma
- Leukemia
- Purpura
- Intussusception
- Foreign body
- Typhoid fever
- Malaria
- Hepatic disease
- Drugs
- Parasites
- Endometriosis
- Factitial proctitis

Common:
- Internal hemorrhoids
- Anal fissure
- Anal fistula
- Rectal fistula
- Rectal adenomata
- Carcinoma—rectum and colon
- Colitis—
    - Ulcerative, idiopathic
    - Amebic
    - Bacillary
- Proctitis
- Diverticulosis
- Prolapse
- Trauma
- Postoperative

VIRUS ASPECTS OF CARCINOMA

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Cancer research from a virus viewpoint has as yet attracted the efforts of relatively few investigators, but an increasing interest in the possible virus causation of carcinoma, as well as of tumors in general, has been apparent during the past ten years. Viruses have now been shown to be intimately associated with the tumor-cancer problem, and the consistent presence of viruses in certain malignant growths must finally be resolved to a role of causation or definitely relegated to a position of simple association. Comparatively little effort has been expended on the direct investigation of human cancer from the virus viewpoint or from other basic approaches. Physiological, virological and immunological studies on human cancer are very limited. Most investigations in the field of cancer research are conducted on tumors of animals and birds.

Viruses are now becoming one of the more important aspects of cancer research. From the information at present available on such malignant tumors as the carcinoma of rabbits that originates from the Shope papilloma and the breast carcinoma of mice that is stimulated by the presence of the Bittner virus, the filterable viruses must at least be considered biological carcinogenic agents along with coal tar and certain refined chemical compounds. Viruses have a broad distribution among animals and human beings, and some species seem to lurk for long periods or even a lifetime within tissues without producing apparent symptoms. The distribution of viruses and their tumor-producing potentialities point out the viruses as a possible factor in the ultimate causation of most malignant tumors. If, however, viruses should be the basic cause of all or some cancers, the problem still is not a simple one. Hereditary susceptibility, hormonal influences and nutrition all seem to play an important role in the final appearance of the malignant cell.

Many benign and malignant tumors of animals and birds have now been described that have an associated virus and can be reproduced by injection of the virus into the specific animal host. A virologist does not hesitate to accept a virus causation for such tumors as the rabbit papilloma, the oral papilloma of dogs, or the Rous tumor of chickens. However, the ease with which cancer can be produced by the application of chemical agents, and the apparent absence of viruses in cancer thus artificially produced reacts to discredit a theory of virus causation. On the other hand, it cannot be said that the presence of a virus in any tumor has at this time been absolutely disproved. Failure to transmit a tumor upon limited trial under specific conditions does not necessarily mean that an infective agent is not present. Such a situation exists in the case of the cottontail papilloma established in domestic rabbits as described below. In virus tumors we are dealing with host-parasite relationships of considerable complexity, with most of the operative factors yet unknown. Nevertheless, at this time viruses seem to some investigators the most tangible factor as a general cause of both benign and malignant growths.

Researches on tumors are more than ever bringing up questions as to the nature of viruses. There has been a great tendency among those in the field of cancer research to regard a virus as a cell reproductive component gone wild. Such might be termed a feral gene. As yet, however, there is no significant evidence that viruses have their origin in host cells. Evidence presented by the data of this paper tends to establish that the infective agent of mammary carcinoma in mice is a parasite entirely foreign to normal mouse tissue. The origin of viruses from microbes and their nature as highly adapted parasites are reasonable concepts and correspond to the course of parasitism and the nature of highly adapted parasites as observed throughout the biological world.

Many tumors, both benign and malignant, that occur in various species of lower animals, birds and mammals, have been shown to be due to the presence of a filterable virus. The viruses causing the tumors generally are very specific and will reproduce the tumors only if inoculated into one species of animal and into one kind of tissue. The oral papilloma of dogs, for example, appears very specific for the dog and has not been successfully inoculated into other species nor into any tissue except oral epithelium. The papilloma of cottontail rabbits can be easily transmitted in series through cottontail rabbits. It can be transferred to domestic rabbits for one generation but cannot easily be maintained in them by serial inoculation. When the papilloma is inoculated from the cottontail rabbit into the domestic rabbit it often becomes cancerous. The papilloma virus cannot be isolated from the cancer, but cancer transplants can be transmitted in series in domestic rabbits by the use of living cancer cells as the inoculum. As the cancer transplant grows it appears to immunize the rabbit against the virus of the papilloma.[7]

Mammary cancer of mice has received a great deal of experimental study, and during the past five years has been the principal object of our investigations on virus tumors. Susceptibility to spontaneous mammary cancer in mice is a strong hereditary factor, and high- and low-cancer strains of mice have been developed by selective breeding. In a high-cancer strain, as many as 95 per cent of female mice may develop breast cancer after producing three or more litters. The development of this cancer of mice is greatly affected by hormones and nutritional factors. The cancer occurs in mice, however, only if a specific agent is present, as was first demonstrated by Bittner.[2] The agent is regularly transmitted from cancerous mothers to young mice through the milk and has been variously referred to as the milk influence, the milk factor, or the milk agent. Bittner[3,4] showed that the agent was filterable, and our co-operative studies[5] have demonstrated that the agent is of the magnitude of a virus. Injected into young mice of a susceptible strain, the agent will stimulate cancer-production after a period of seven months to a year. It is of the greatest importance that the agent has been found to be antigenic. Andervont and Bryan[1] prepared two antiserums from two rabbits and found that these serums neutralized the milk agent. In the antiserum groups he obtained only one tumor in thirty-six mice injected with a mixture of antiserum and milk agent, and ten in fifteen mice injected with the agent alone. We have extended this work with more controls and have established beyond question that the agent is antigenic. Upon injection of the agent into rabbits or rats, tumors do not develop but these animals are stimulated to produce antibodies. Our serums were prepared by immunizing groups of three or more rabbits by multiple injections of high-speed centrifugates of mouse tumor tissue. The centrifugal speeds were such as would concentrate particles of virus size. Antiserum from the immunized rats or rabbits neutralized the milk agent completely. The milk agent, therefore, has all of the cardinal characters of a filterable virus and may correctly be referred to as a tumor-producing virus.

Recently we have found that the mouse cancer antiserums not only neutralize the virus of mammary carcinoma[6] of mice but also inactivate the cancer cells[5] when they are suspended in the antiserum. Cancer cells are not inactivated by treatment with normal rabbit serum nor by treatment with serum from rabbits and rats immunized against normal mouse tissue. The cytotoxic property of the mouse cancer antiserum for cancer cells has been demonstrated in several experiments of which the following is an example.

A cancer cell suspension is prepared from masses of cancerous tissue removed sterilely from mice. The cancer tissue is forced through a tissue press. The macerated tissue is suspended in 0.9 per cent saline solution and placed in long test tubes to settle. After thirty minutes, the larger masses of cancer cells will have settled to the bottom and above will be a suspension of free tumor cells and small aggregates of tumor cells. If a susceptible mouse is injected with a small dose of these cells, a cancer will grow as a transplant tumor. In this experiment, ten mice were thus injected as a control group to assure the activity of untreated cells. For the actual test of cytotoxic activity of the serum, a portion of cancer cell suspension was mixed with five times the volume of mouse cancer antiserum and held for three hours at room temperature and for three hours at refrigerator temperature. Ten mice were then injected with 0.1 c.c. of the mixture. Two additional controls were set up by treating portions of the cancer cell suspension in a similar manner with normal rabbit serum and with serum from rabbits immunized with normal mouse tissue. The results are shown in Table I.

TABLE I. CYTOTOXIC PROPERTY OF MOUSE CANCER ANTISERUM

Rabbit antiserum—C3H tumor—ZBC mice without milk factor

No. mice	Materials injected	No. tumors 10 days	No. tumors 15 days	No. tumors 40 days	No. tumors 60 days
10	Tumor cell suspension + cancer antiserum	0	0	0	0
8*	Tumor cell suspension + normal mammary antiserum	1	3	8	8
10	Tumor cell suspension + normal rabbit serum	1	1	5	7
10	Tumor cell suspension + saline solution	10	10	10	10

*2 died from intercurrent infection.

From these results it is seen that the cancer antiserum prevented completely any tumorous growth of the cancer cells. The cancer cells suspended in saline solution grew rapidly to produce transplant cancers in all ten control mice. Most of the mice injected with cancer cells in normal mammary tissue antiserum and normal rabbit serum developed transplant cancers, but the cancerous growths appeared definitely later and were fewer in number. In this and other experiments it has been a consistent finding that normal rabbit and normal rat serums and the serums of rabbits immunized with normal tissues contain natural antibodies, or something of a similar nature, that affect cancer cells adversely and retard their growth to a limited degree. This effect, as found in normal tissue antiserum, is removed by absorption with normal mouse breast tissue cells but not with cancer cells. Thus, the slowing effect of normal tissue antiserum seems due to a nonspecific factor that combines better with normal cells than with cancer cells.

Absorption experiments with the mouse cancer antiserum reveal that the antibodies present are absorbed by cancer cells but not by normal breast tissue cells. This seems to establish the presence of antibodies that are specific for cancer cells and will not attack normal cells. The implication is that mouse cancer cells have taken on a new specificity and are immunologically different from normal mouse cells. It seems of considerable significance that our findings indicate that mouse cancer cells are antigenically different from normal cells and that the same antiserum will neutralize a virus and inactivate the cancer cells stimulated by that virus.

Originally thought to be more or less a character of protoplasmic disorganization transmitted genetically, the mouse cancer now clearly seems to be a virus infection with susceptibility and resistance strong genetic factors. With the addition of these findings on mammary carcinoma of mice to those previously established for other virus tumors, it would seem that we must more and more turn our eyes toward virus investigations in cancer research.

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Discussion

DR. MAURICE B. VISSCHER, U. of M.: I am very much impressed by the newer work Dr. Green has been doing. It is now quite apparent that it is possible to produce antibodies against the milk influence. The part of Dr. Green's work that I had not known about until this evening is the demonstration that this antibody is effective not only in preventing the action of this virus-like agent in producing the carcinoma, but is also active in preventing the growth of carcinoma cells in cell suspensions. The two processes are quite different because in one case a carcinogenic agent is inhibited and in the other a complete cell is prevented from growing. To show that the actual carcinoma cell can be prevented from further growth by the action of an antibody of the sort produced in another species is really a most important step forward. I wouldn't suggest that one would necessarily find that this would have any bearing on the stopping of the growth of masses of cells but it is a step in that direction. I wonder if Dr. Green has anything to say about what masses of cells will do under comparable circumstances. He has given us an excellent presentation of very important new work.

The meeting adjourned.

J. A. LEPAK, *Secretary*

WOMAN'S AUXILIARY

Mrs. Edward V. Goltz, *President*
Saint Paul, Minnesota
Mrs. John K. Butler, *Editor*
Carlton, Minnesota

STATE BOARD

On January 30, Mrs. E. V. Goltz, president, presided at the winter meeting of the State Board of the Woman's Auxiliary of the State Medical Association, which was held at the Radisson Hotel at the University of Minnesota in Minneapolis. The guest speaker at the luncheon was Dr. Myron M. Weaver, Assistant Dean of Medicine, who outlined the latest developments of the Murray-Wagner-Dingell Bill and its implications. His talk was intensely interesting and informative.

BLUE EARTH COUNTY

The Blue Earth Auxiliary met at the Mankato Clinic on January 28. This was a business meeting only, and was devoted to a discussion of public relations and the cancer drive. Mrs. A. F. Kemp is county chairman of Cancer Control. On January 21, a joint meeting of the Blue Earth and Nicolett-Le Sueur program and executive committees was held at a luncheon at the Elks Cafe, Mankato. At this luncheon, a date was set for a public relations meeting at which Dr. Haddow M. Keith of the Mayo Clinic will be the speaker.

HENNEPIN COUNTY

On January 4 the Hennepin County Medical Auxiliary held a luncheon meeting at the Radisson Hotel. Mrs. Donald Bacon, wife of a Saint Paul physician, read the play *Dear Ruth.*

Mrs. N. H. Lufkin was chairman for the lunch and Mrs. Martin Nordland had charge of hospitality.

Mrs. Harold F. Wahlquist, a former president of Heneepin County Auxiliary, now national treasurer of the board of directors of the Women's Auxiliary of the American Medical Association, attended the mid-year meeting in Chicago.

The death of Dr. J. F. Curtin, husband of the president of the Auxiliary, saddened the members.

RAMSEY COUNTY

Miss Ruth Freeman, assistant professor of Public Health Nursing at the University of Minnesota, addressed the Ramsey County Auxiliary at the Ramsey County Library, January 28. Her subject was "New Developments in Public Health."

Mary Ellen Hoaglund, winner of the Junior award, and Beverly Hanklin, winner of the Senior award, of Saint Paul, read their essays on tuberculosis and were presented with war stamps.

ST. LOUIS COUNTY

On January 8, the St. Louis County Auxiliary met at the home of Mrs. Martin A. Wallace, Duluth. After the business meeting "Juvenile Delinquency" was the subject for discussion. On Saturday evening, January 26, Auxiliary members entertained their husbands at the annual dinner dance at the Kichi Gammi Club.

MOWER COUNTY

Mrs. L. G. Flannagan, of Austin, was hostess to her Auxiliary on January 28. Mrs. C. L. Sheedy of Austin gave the Program on Plans for Medical Care taken from *Hygeia.*

The Auxiliary, of which Mrs. C. C. Allen of Austin is president, is also active in its work on cancer dressings.

STEARNS-BENTON

Mrs. J. B. Gaida, president, was hostess to the Auxiliary at the Hays Hostess House on January 8. Miss Kay McEnroe, flight instructor of St. Cloud Airport, introduced by Mrs. H. B. Clark, talked on "What is New at St. Cloud Airport."

Stearns-Benton has lost two of its members. Mrs. C. S. Sutton, a former president, died January 7. Mrs. J. B. Beuing died January 28. Mrs. Henery Korda was introduced by Mrs. Carl Luckenmeyer, membership chairman as a new member. Mrs. Charles Donaldson and Mrs. Hayward Kaliher, Foley, were the out-of-town members present.

WASHINGTON COUNTY

Mrs. F. M. McCarten, Stillwater, was hostess to the Washington County Auxiliary on January 8. Mrs. R. Samson joined the Auxiliary as a new member.

WINONA COUNTY

The Winona Auxiliary met for dinner at Hotel Winona on January 7 and then adjourned to the home of Mrs. J. T. Benoit for the business meeting.

ACUTE ARTERIAL OCCLUSION

(Continued from Page 252)

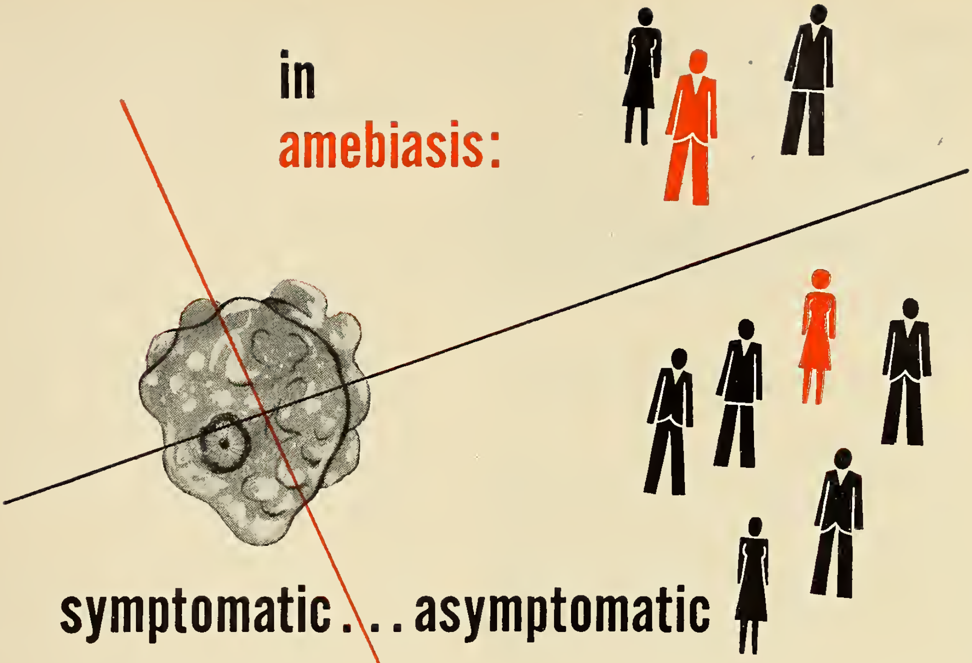
Embolectomy and thrombectomy were not performed in any of these cases, and in only one instance was local anesthetization of the sympathetic ganglia necessary.

This is a small series of cases when compared with the series of McKechnie and Allen—but the results would indicate that use of the plan of treatment for acute arterial occlusion which we have recommended will result in saving some extremities and prolonging some lives. Except for the addition of anticoagulant therapy this plan of treatment is similar to that previously used on the vascular service for many years.

REFERENCES

1. Barker, N. W.: The clinical use of dicumarol. M. Clin. North America, pp. 929-935, (July) 1945.
2. McKechnie, R. E. and Allen, E. V.: Sudden occlusion of the arteries of the extremities: a study of 100 cases of embolism and thrombosis. Proc. Staff Meet., Mayo Clin., 10:678-682, (Oct. 23) 1935.

in amebiasis:



symptomatic . . . asymptomatic

Barr[1] states: "... it is just as important to treat properly the symptomless 'carrier' of this parasite as to treat the patient suffering from amebic dysentery."

Stitt, Clough and Clough[2] report, "The disease may be symptomless . . . These mild or symptomless cases have been shown to outnumber greatly the cases with clinical dysentery. They constitute the carriers or 'cyst-passers'."

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1. *Barr, D. P.: Modern Medical Therapy in General Practice, **2**:1830, Baltimore, Williams & Wilkins Company, 1940.*
2. *Stitt, E. R.; Clough, P. W., and Clough, M. C.: Practical Bacteriology, Haematology and Animal Parasitology, ed. 9, Philadelphia, P. Blakiston's Son & Co., 1938, pp. 410-412.*

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In Memoriam

JOHN MILTON ARMSTRONG

In the passing on December 15, 1945, of John Milton Armstrong, the medical profession of Saint Paul lost a colorful member who had devoted much of his time and talent to the interests of the profession.

Born in Saint Paul, April 10, 1875, the son of George W. and Jane C. Armstrong, who came to Saint Paul in 1853, Dr. Armstrong graduated from Central High School in 1894. He obtained his medical degree from the University of Minnesota in 1901 where he was a member of Chi Psi and Nu Sigma Nu fraternities. After serving an internship at St. Joseph's Hospital in Saint Paul in 1901-2, he practiced for three months in Montgomery, Minnesota.

In 1902 he began practicing in Saint Paul and from 1907 to 1911 served as Assistant Commissioner of Health. Early interested in Dermatology and Genito-Urinary diseases, he was instructor in this department in the University of Minnesota medical school from 1903 to 1916. In 1913-14 he took postgraduate work in his specialty in Vienna, returning just prior to World War I. He was a fine diagnostician in his specialty.

Dr. Armstrong was a member of the Minnesota Academy of Medicine of which he was president in 1941, the Minnesota Dermatological Society, the Ramsey County Medical Society of which he was president in 1914, the Minnesota State and American medical associations.

He was greatly interested in medical literature and did more for the Ramsey County Medical Library to raise it to its present enviable status than any other individual. It was he who began and largely developed the library museum and obtained endowments in memory of former members for the purchase of rare volumes. He had served as a member of the library committee since 1906 and maintained his interest in the library even after his retirement from active practice in 1941. He worked particularly hard on the completion of files of old American medical periodicals and it is this collection especially that makes the library such an outstanding one. He contributed to the library many of his own books and many interesting items pertaining to very early Minnesota physicians, especially Saint Paul physicians.

Dr. Armstrong was business manager of the *Saint Paul Medical Journal* from 1908 until 1912 and was member of the Editing and Publishing Committee of MINNESOTA MEDICINE from 1924 until 1933. As a member of the original Historical Committee of the Minnesota State Medical Association appointed in 1928, he began the publication in 1938 of the History of Medicine in Minnesota in MINNESOTA MEDICINE and stimulated others to continue the work.

In January, 1932, he was elected to the Board of Trustees of the Hill Reference Library; in May, 1942, he was asked to serve as chairman of the library committee, and in 1943 he was elected chairman of this committee. Only the most severe illness kept him from fulfilling his committee duties and he attended the meetings until a few days before his death. Miss Starr, Librarian of the Hill library, calls him "a true bookman" and she says further: a "brilliant man, endowed as few are, he was modest. His suggestions were most helpful in building up the natural history collection of the library."

He was a charter member of the medico historical club *Kos Knidos,* and remained very active in this association which flourished in the Twin Cities until the beginning of World War II.

He was deeply interested in all branches of natural science which included every phase of natural history, astronomy and the microscopic study of fungi and parasites. He ground and constructed a very creditable reflecting telescope with which he and his friends studied the heavens. He was interested in the geological structure of the earth and had collected many specimens of fossils from the Ordovicion about Saint Paul. He possessed a beautiful collection of polished agates obtained from the local glacial drift. His interests led him into the study of ancient and modern archery and he accumulated an important, representative collection which he eventually presented to the Hill Reference Library. This gift occasioned an exhibition on Archery in this library. It was described by James Gray *(Saint Paul Dispatch,* February 19, 1943) as containing old, rare volumes (going back as far as the early 17th century), as well as scholarly, literary and technical items. James Gray labeled Dr. Armstrong "an unobtrusive, genial and humorous gentleman who has always loved the out-of-door life." His home-made bows and arrows made from various woods of North and South America were beautifully made. His intellectual curiosity led him to read and familiarize himself with the Einstein Theory of Relativity, when it first came out.

Books were his consuming interest. He was an omnivorous reader, with interest in all literature dealing with American medical history. In his search for material for the History of Medicine in Minnesota he literally went through hundreds of volumes of older American medical periodicals. His historical articles on the "History of Cholera in America" and "Dr. Purcell, the first Minnesota Physician," were very well received. His very interesting article on Dr. W. S. Cox (MINNESOTA MEDICINE, January, 1945) is proof of his gift of ferretting out information from every imaginable source. His wide reading in medical history is shown in one of his very early publications, "The Genesis of the Transmissible Disease" (1909), the prize essay of the Ramsey County Medical Society for 1908, which also shows his earnest application to his work in the Saint Paul Department of Health and his interest in bacteriology.

One of his finest qualities lay in his ability to stimulate similar interests in others. He enjoyed revealing the results of his searches. Being a storehouse of local, especially local medico-historical information, he was always ready to share it with those looking for it. With his varied hobbies he was a most colorful personality to all his friends and those who knew him well.

Dr. Armstrong married Ida Dobyns, of Shelbyville,

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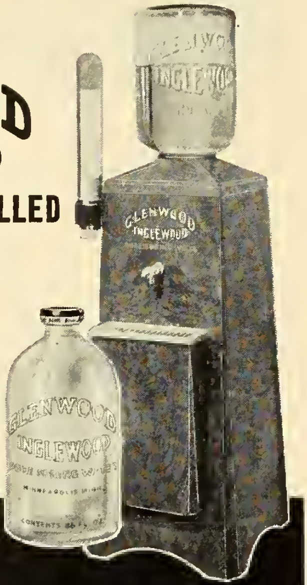

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Missouri, on May 31, 1909. He is survived by his widow and four children, Jane, Anne (Mrs. W. A. Wallis), Elizabeth (Mrs. Russell T. Nichols) and John Milton, Jr.

WILLIAM JAMES COCHRANE

Dr. William J. Cochrane, for many years a resident of Lake City, passed away February 1, 1946, at the Lake City Hospital.

Dr. Cochrane was born in Lake City, Minnesota, June 27, 1867. He attended high school in Winona and received his M.D. from the College of Physicians and Surgeons in Chicago in 1895. He served as intern for eighteen months in the Illinois Eye and Ear Infirmary in Chicago, and then located at Quincy, Illinois, in 1896. He moved to Lake City in 1899.

He served as Captain in the Army Medical Corps during World War I and in 1920 and 1921 practiced in Iowa, returning to Lake City in 1921.

Dr. Cochrane was a member and past president of the Wabasha County Medical Society, and a member of the Minnesota State and American Medical Associations. He had been chairman of the Sanatorium Commission of Winona and Wabasha Counties since 1927, and had been president of the Lake City Hospital board. He also was local surgeon for the Chicago, Milwaukee, St. Paul & Pacific Railway. A Mason for fifty years, he was a Past Master of the local lodge.

In 1916 he took postgraduate work in eye, ear, nose and throat at the Illinois Post Graduate Hospital in Chicago.

Dr. Cochrane married Nellie A. Phelps of Lake City in 1901. He is survived by his widow and two daughters, Mrs. Leo F. McCaffrey of Brainerd and Mrs. John R. Wala of Beverly Hills, California, and one son, William, of Chicago.

Dr. Cochrane had been a member of the Congregational Church in Lake City since 1901 and had served as deacon and trustee. In 1943 he was elected president of the Lake City Bank and Trust Company. He was active in civic affairs and held the respect and admiration of all who knew him.

THE Rh FACTOR

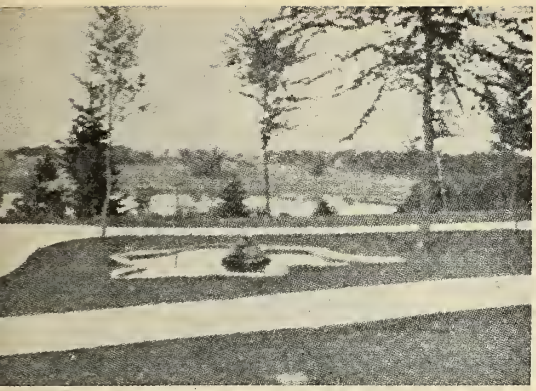
(Continued from Page 249)

tor and paid very little attention to the changes in the brain.

It becomes perfectly obvious that any blood bank or clinical laboratory which maintains a list of blood donors should include in that list the names of Rh negative individuals who may volunteer as donors. Such donors should preferably be male, and if female, should not have been pregnant, unless the husband happens to be Rh negative. Prompt transfusion with Rh negative compatible blood may save a life, either a hemorrhaging patient or an erythroblastic baby.

* * *

In the preparation of this paper, the senior author is deeply indebted to Dr. Isreal Davidsohn, pathologist of Mt. Sinai Hospital, Chicago, whom he freely consulted for suggestion and criticism.



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◆ Of General Interest ◆

Dr. Paul C. Benton has re-opened his offices at Gibbon, after an absence of three and a half years in the Army Medical Corps.

* * *

Dr. Henry Roemer has returned home to Winona from thirty-nine months of service in the Navy and has resumed his practice at the Winona Clinic.

* * *

After three years in service as a flight surgeon, Dr. Lawrence Larson has resumed his practice in Minneapolis, with offices in the Medical Arts Building.

* * *

Dr. John J. Ederer, formerly of Mahnomen, Minnesota, has retired from practice because of ill health and is now residing in Minneapolis.

* * *

Dr. Russell O. Sather has assumed the duties of health officer at Crookston, replacing Dr. Lyle Brown, who is ill.

* * *

Dr. Robert Fuller Mears, Northfield, has purchased a site for the erection of a modern clinic building as soon as materials are available.

* * *

Dr. David H. Rolig has closed his offices at Howard Lake and moved with his family to Saint Paul, where he is associated in practice with Dr. Olaf Sohlberg.

* * *

Dr. Joseph F. Bicek, 1267 Lowry Medical Arts Building, Saint Paul, announces the limitation of his practice to obstetrics and gynecology.

* * *

Dr. J. Arnold Malmstrom and Dr. Edward N. Peterson of Virginia, attended the sectional meeting of the American College of Surgeons held in Minneapolis during the last week of January.

* * *

Dr. Robert P. Buckley was elected president of the Board of Directors of the Duluth Mental Hygiene Clinic at the annual meeting. Dr. Buckley was formerly associated with the hospital in Coleraine.

* * *

Drs. Raymond J. Josewski and Lloyd Taylor, Stillwater, represent the medical profession on the health committee for Washington County, which has been organized by the County Board of Commissioners.

* * *

Dr. Thomas Byrd Magath, of the Mayo Clinic, was elected president of the State Board of Health at the annual meeting of the Board held in Minneapolis on January 24.

* * *

Discharged from the Navy after thirty-five months of service as lieutenant commander, Dr. Harold M. Skaug has returned to Chatfield and has resumed his medical practice.

* * *

Dr. Oscar F. Mellby, president of the Oakland Park Sanatorium at Thief River Falls, was re-elected at the annual business meeting. Dr. Baldwin Borreson, superintendent of the sanatorium, is secretary ex officio.

* * *

Dr. William R. Jones was re-elected chief of staff of Eitel Hospital at the annual staff dinner held at the Minneapolis Club. Dr. Frank Hirschfield was made assistant chief of staff, and Dr. Harold Reif secretary.

* * *

Effective February 1, Dr. Howard G. Bosland terminated his practice at Verndale to become associated with Dr. Berton J. Branton at his clinic in Willmar. Dr. Bosland had been practicing in Verndale since October, 1932.

* * *

Dr. Anthony H. Field, who for the past year was stationed in England with the 109th General Hospital, has resumed his practice of medicine and surgery at Farmington. His offices are in the Sanford Hospital Building.

* * *

Dr. Clarence W. Walter, Saint Paul, has resumed practice at 1210 Lowry Medical Arts Building after serving as Lieutenant Commander in the Navy. He was stationed for two years in the Aleutian Islands and then at the Navy Hospital at Long Beach, California.

* * *

Dr. Emmet V. Kenefick has re-opened his offices for the practice of internal medicine at 710 Lowry Medical Arts Building, Saint Paul. A captain in the Air Force, Dr. Kenefick was stationed at Tinker Field, Oklahoma City, and at the Santa Ana Air Base in California.

* * *

Dr. John R. Kelly, who before his induction into the Army Medical Corps was practicing at Aitkin, Minnesota, has opened offices at Cold Spring. Dr. Kelly was in service for three and a half years with eighteen months of foreign duty. During this time he was stationed in Canada and Alaska.

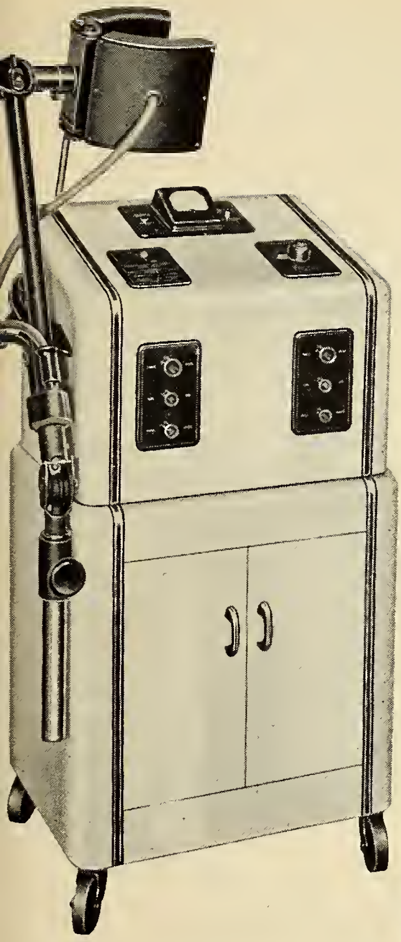
* * *

Dr. Gaylord Anderson, former Director of Public Health at the University of Minnesota, was guest speaker at the midwinter meeting of the Minnesota Organization for Public Health Nursing held in Coffman Union. Dr. Anderson only recently returned from military service.

* * *

Colleagues and friends of Dr. L. J. Alger, of Grand Forks, North Dakota, will be interested in knowing that

(Continued on Page 288)



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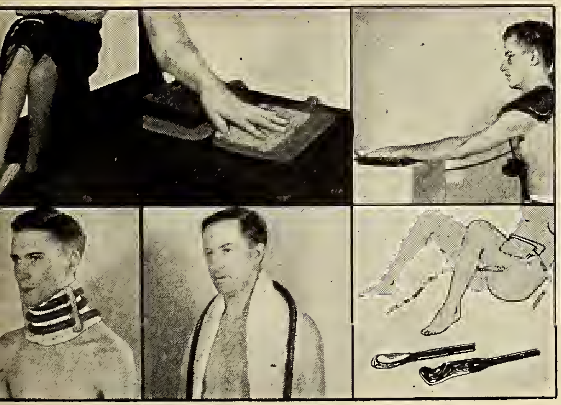

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(Continued from Page 286)

Dr. Alger, on a recent trip to California, where he attended the Clinical Postgraduate Convention in Los Angeles, solved transportation difficulties by flying his own Stinson Voyager.

* * *

Dr. L. G. Culver, Saint Paul, has resumed practice in association with Dr. Carl L. Larsen and Dr. Merritt W. Wheeler, specializing in ophthalmopathy and Otolarynogology, following discharge from the Navy where he served aboard the *Ticonderoga* and the *Kenton* as Commander.

* * *

Dr. Balcome, son of the late Dr. F. E. Balcome, who practiced in Saint Paul for thirty years, served in the South Pacific. He is a graduate of Macalester College and the University of Minnesota Medical School, and had been practicing in Saint Paul for nine years prior to his enlistment.

* * *

Dr. Donald Dukelow, director of public health education in the Minnesota Department of Health for the past eight and a half years, has been appointed secretary of the health and medical care division of the Minneapolis Council of Social Agencies. Dr. Dukelow is also a member of Mayor Humphrey's health advisory committee which was recently organized in an effort to combat the sharp increase in communicable diseases in Minneapolis.

After an absence of more than three years in the military service, Dr. Manford B. Dahle has returned to Glenwood and re-opened his offices in the Glenwood Theater Building. Following a year in the South Pacific, Dr. Dahle was on duty for the remainder of his enlistment in this country.

* * *

Dr. Harvey O. Beek has resumed the practice of internal medicine in his offices in the Lowry Medical Arts Building, Saint Paul Dr. Beek entered service as a member of the University Hospital Unit No. 26, but later was made chief of medical service at the 45th General Hospital located in Bari, Italy, with rank of lieutenant colonel.

* * *

Dr. Albrecht E. Muller, who has been practicing in Saint Paul since his discharge from five years in military service, has purchased a home in North Saint Paul and will open offices there as soon as equipment can be obtained. Dr. Muller is a graduate of the University of Minnesota Medical School and interned at St. John's Hospital in Saint Paul.

* * *

Dr. Joseph P. Spano, who was discharged from military service last November, has returned to his practice in Minneapolis and has re-opened his offices at 328 East Hennepin Avenue. Dr. Spano went overseas with the 250th Staff Hospital in November, 1943, and served in

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England, France, Belgium, Germany, Bavaria and Austria. He entered service in June, 1942, and was stationed at Fort Leavenworth for the first year.

* * *

The chief topic of discussion at the Health Workshop, which was sponsored by farm and labor groups at their joint convention in Saint Paul during the first week of February, was a medical program suitable for the masses and its cost. Delegates from Wisconsin, Minnesota, and both Dakotas united in a demand for political action which would initiate improvement of health standards.

* * *

Dr. A. C. Hilding was elected chief of staff of St. Luke's Hospital in Duluth, at the annual dinner meeting of the medical staff. The other officers elected at this time were Dr. Arnold O. Swenson, vice chief of staff; Dr. Charles Miller Bagley, secretary; Dr. Frank J. Hirschboeck, chief of medicine; Dr. Gordon C. MacRae, chief of obstetrics; and Dr. Arden L. Abraham, chief of x-ray.

* * *

Dr. Lawren B. Nesset, who was released from military service in January of this year, is now associated in the practice of medicine and surgery with Dr. Burton C. Ford at the Marshall Clinic in Marshall, Minnesota.

Dr. Nesset, who comes from Canby, Minnesota, graduated from Luther College in Decorah, Iowa, and the University of Minnesota. He interned at General Hospital in Minneapolis, where he was also in residence for a year. Overseas duty took Dr. Lawren into Germany and Czechoslovakia.

* * *

Two members of the Mayo Clinic, Dr. Charles W. Mayo and Dr. Donald C. Balfour, have been signally honored by the Chilean government which has made them commanders in the *Order de Merito*. The presentation of the order—the highest attainable by the medical profession in Chile—was made by Dr. Alejandro Garreton, professor of internal medicine at the University of Chile in Santiago, while he was in Rochester to observe methods of postgraduate study and procedures in practice of internal medicine.

* * *

Dr. Frederick P. Arny and Dr. Milton M. Balcome, recently discharged from duty as flight surgeons in the Army, are now associated in practice in St. Anthony Park, with offices at 2315 Como Avenue.

Dr. Arny, who graduated from the University of Minnesota Medical School in 1935, entered practice at Princeton, Minnesota, where he remained until his induction into the Army seven years later. He is the son of Professor Arny, a member of the faculty of the University. Dr. Arny's area of duty was mainly confined to the ETO.

* * *

One of the first British physicians to take advantage of the resumption of the reciprocal fellowships between England and the University of Minnesota, which were discontinued during the war, is Dr. Richard Mayon-White, of Sussex, England, now studying in the Department of Pediatrics. A pioneer in this branch

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OBSTETRICS—Two-Week Intensive Course starting April 8 and May 6.
MEDICINE—Two-Week Intensive Course starting April 8.
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of medicine in England, study in this country is essential for him, since children's diseases are not treated as a special branch of medicine in England. Dr. Mayon-White and five other English physicians were awarded fellowships by the Rockefeller Foundation.

* * *

Four members of the Mayo Clinic, Dr. Wallace E. Herrell, Dr. Charles W. Mayo, Dr. Donald C. Balfour and Dr. Waltman Walters, took part in the program at the sectional meeting of the American College of Surgeons held in Minneapolis in January.

Dr. Herrell discussed "Treatment of Surgical Infections by Chemical and Antibiotic Agents." Dr. Walters was a discussion leader on "Treatment of Open Wounds." Dr. Mayo took part in a panel discussion on pre- and postoperative supportive treatment, and Dr. Balfour was the moderator of a discussion and open forum on graduate training in surgery.

* * *

The annual George Chase Christian Lecture in the field of cancer research was delivered at the University of Minnesota by Dr. Leonell C. Strong, associate professor of anatomy, Yale University School of Medicine, on February 7, 1946. Dr. Strong's subject was "Mice, Men and Malignancy."

A pioneer in the use of inbred strains of mice for cancer research, Dr. Strong's first contribution to the study was the theory that failure in growth of grafts of tumor tissue is a consequence of inherited differences between the tissues of the host and the tumor cell, and depends on genetic differences in tissues.

* * *

The following appointments to the consultant staff of the Veteran's Hospital in Minneapolis have been approved by the Veterans Administration: Dr. Charles D. Creevy, senior consultant in urology; Dr. Thomas Kinsella, senior consultant in thoracic surgery; Dr. Carl W. Waldron, senior consultant in plastic surgery; Dr. Nathaniel H. Lufkin, senior consultant in pathology; Dr. Joseph W. Baird and Dr. Arthur W. Friend, consultants in anethesiology; Dr. William J. Norman, consultant in urology, and Dr. William Hollingshead, consultant in medicine; all of Minneapolis. Dr. Rodney Kendall, of Saint Paul, has been made consultant in dermatology.

* * *

Following the completion of his terminal leave on February 1, Major Thomas R. Dolan entered medical practice at Caledonia in association with Dr. Jacob J. Ahlfs.

Dr. Dolan, a former resident of Green, Iowa, is a graduate of Loras College, Dubuque, and the St. Louis University Medical School, St. Louis, Missouri. Beginning his internship in 1940, he was at the Charity Hospital in New Orleans for a year and a half. Of four and a half years in military service, Dr. Dolan spent thirty months as flight surgeon with the 13th Army Air Force Heavy Bombardment Squadron in the Pacific Theatre. During the latter part of his service, Dr. Dolan was engaged in research in aviation medical problems.

Dr. Hugh Monahan has returned to practice in association with his father, Dr. Robert H. Monahan, and Dr. Claire C. Craig at International Falls, after two and a half years in the Army Medical Corps.

Dr. Monahan, who was a member of the medical reserve, was called into active service in July, 1943. He was in residence for fifteen months at Fitzsimons General Hospital in Denver, as assistant chief of the eye, ear, nose and throat section. Later he went overseas with the 70th Infantry Division as battalion surgeon and was stationed in France and Germany. When the war ended he was assigned to the 280th Station Hospital in Germany and the 15th General Hospital at Udine, Italy. Dr. Monahan intends specializing in diseases of the eye, ear, nose and throat.

* * *

Announcement has been made of the election of Dr. Jay Arthur Myers, Minneapolis, as chairman of the editorial board and editor-in-chief of *Diseases of the Chest*, as successor to the late Dr. Ralph C. Matson.

Other members of the editorial board are: Dr. Andrew L. Banyai, Wauwatosa, Wisconsin; Dr. Charles M. Hendricks, El Paso, Texas; Dr. Champ H. Holmes, Atlanta, Georgia (inactive), and Dr. Richard Overholt, Brookline, Massachusetts.

Scientific manuscripts should be sent to Dr. Jay Arthur Myers, 111 Millard Hall, University of Minnesota, Minneapolis 14, Minnesota. All notices and miscellaneous items for publication in the journal should be sent to the Executive Offices, American College of Chest Surgeons, 500 North Dearborn Street, Chicago 10, Illinois.

* * *

Senior members of the Academy of Medicine and seven honorary members were guests of honor at the dinner meeting of the Academy held at the Minneapolis Club on January 23. The honorary members, all from the University of Minnesota, are Elexious T. Bell, professor of pathology; Harold S. Diehl, dean of medicine; Henry L. Ulrich, clinical dean of medicine; Benjamin J. Clawson, professor of pathology; George D. Head, clinical professor of medicine; and Richard E. Scammon, dean of medical science. The seventh member, Adolph M. Hanson, Faribault, associate professor of clinical medicine, was unable to attend, because of illness. Lieutenant Colonel Edward Evans, associate professor at the University of Minnesota Medical School and senior consultant in orthopedic surgery at the Veteran's Hospital, Minneapolis, was chairman of the meeting. Dr. Evans had just returned from four years' service in the Army.

* * *

Dr. Robert D. Estrem and Dr. J. D. Mouritsen, recently discharged from military service, have rejoined the Estrem Clinic at Fergus Falls.

Dr. Estrem, a captain in the Army Medical Corps, served sixteen of his twenty-two months in service overseas. He was in general surgery at the 90th General Hospital in England his first six months across. Then he was assigned to the Sixth Armored Division under General Patton at the beginning of the Battle of the Bulge. The following five months he was in front-line service n a forward-aid station with the 86th Cavalry Division on the march through France, Belgium, Luxembourg and Germany. He was awarded the Bronze Star for particularly meritorious service.

Dr. Mouritsen entered the Navy in September, 1942, and was discharged in December, 1945. A lieutenant commander, he served aboard the USS *Colorado* in the Pacific for twenty-six months. He was in action at Tarawa, Kwajalein, Eniwetok, Saipan, Guam, Tinian, Leyte, Mindoro, Luzon and Okinawa, and was in Tokyo Bay when the peace terms were signed.

* * *

Friends and neighbors—five hundred of them—disregarding a temperature of fifteen degrees below zero, gathered from miles around for a party held in the high school at Willow River in honor of Dr. William C. Ehmkes's sixty-eighth birthday. Features of the program were addresses by Dr. Thomas Moe, of Moose Lake, and Dr. Paul G. Boman, of the Duluth Clinic. A biographical sketch of Dr. Ehmke's life was read, and the doctor was presented with a purse of money in appreciation of his many years of devoted service.

Dr. Ehmke was born in Le Sueur County. He graduated from Hamline University and took his medical degree at the University of Minnesota. Following his internship, he was made company doctor for the Atwood Lumber Company's camps in Pine County. That was more than forty years ago. Finding the country and the people to his liking, he established a practice and has continued it ever since. The "good doc," as he is affectionately known throughout the community, has not only ministered to the health needs of its people, but has also taken an active interest in civic affairs.

* * *

The Hennepin County Medical Society has announced the return from service of the following members:

Dr. Lyman B. Clay has resumed his practice at 2703 East Lake Street. Dr. Clay was a lieutenant commander in the Navy with duty in the South Pacific.

Dr. Harold F. Buchstein, neurological surgeon, had served in naval hospitals at Great Lakes, Illinois, Corona, California, in the South Pacific and on Okinawa, since January, 1942. His offices are in the Medical Arts Building.

Dr. Meyer C. Goldner, orthopedist, has returned to his offices in the Medical Arts Building. He was a staff member of General Hospital 26 in North Africa, and was chief of orthopedics with the group for some time.

Dr. O. L. Norman Nelson, internal medicine specialist, had been in the Navy since October, 1942, as a lieutenant commander. His offices are in the Medical Arts Building.

Dr. Everett C. Perlman, pediatrician, has reopened offices in the Medical Arts Building. A lieutenant colonel in the Army, Dr. Perlman was in service from March, 1941.

Dr. Robert O. Quello has returned to general practice at 4103 Chicago Avenue. He was in service for three years and was stationed at the Army flying school in Waco, Texas, and Pampa, Texas.

Dr. Theodore L. Stebbins, served in the Army at Fitzsimons General Hospital, Denver, Colorado, and Gen-

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eral Hospitals 188 and 156 in England. Dr. Stebbins is an urologist, with offices at 1409 Willow Street.

Dr. John D. Galloway, orthopedist, a major in the Army, was with General Hospital 26 in England, North Africa and Italy. He has re-opened his office in the La Salle Building.

Dr. Raymond P. Hawkinson has returned to general practice at 1025 Broadway. Dr. Hawkinson, with the rank of major, was executive officer at Hoff General Hospital, Santa Barbara, California.

Dr. Maynard C. Nelson, surgeon, a lieutenant commander in the Navy, served in the Pacific Theatre for twenty-two months, and as chief medical officer of Navy V5 at the University of Minnesota. His offices are at 421 Medical Arts Building.

Dr. Lewis J. Roberts has resumed general practice in his offices at 3827 Central Avenue in association with Dr. Hoff D. Good. A lieutenant commander in the Navy, he served twenty months with Naval Aviation in Hawaii.

Dr. Stanley W. Roberts has resumed practice in his offices at 1110 Lowry Avenue. Dr. Roberts, a lieutenant commander in the Navy, served a year with the amphibious forces in the Southwest Pacific. Later he was in the office of Naval Officer Procurement.

Dr. Arthur N. Russeth has re-opened his offices at 302 Physicians and Surgeons Building. A lieutenant commander in the Navy, Dr. Russeth was in the South Pacific with the Marines for twenty months. Later he was at the Minneapolis Naval Air Station and the Naval Hospital at Corvallis, Oregon.

Dr. Donald B. Simonson has resumed his practice at 4151 Thomas Avenue North. Dr. Simonson, a captain in the Army, served with a hospital train in France and Germany, and later at the Torney General Hospital at Palm Springs, California.

* * *

Dr. Burton Rosenholtz has returned to his pediatric practice with offices at 814 Lowry Medical Arts Building, Saint Paul, following discharge from the Navy. He served as Lieutenant Commander in the Far Pacific, much of the time caring for shock casualties aboard an Ambulance Hospital ship.

UNIVERSITY NEWS

The Board of Regents of the University of Minnesota has announced the appointment of Dr. Donald Wilson Hastings as professor and head of the Department of Neuropsychiatry in the Medical School. Dr. Hastings is replacing Dr. J. Charnley McKinley, who has resigned because of ill health.

Since his release from the Army in August, 1945, where he had served as chief psychiatrist of the Eighth Air Force in England, and later as chief Air Force Psychiatrist in Washington, Dr. Hastings has been professor of psychiatry at the Women's Medical College in Philadelphia. He is a graduate of the University of Wisconsin Medical School and interned at the Philadelphia General Hospital. He held a Rockefeller Fellowship in Psychiatry at the Pennsylvania Hospital and Institute for Nervous and Mental Diseases in 1936-38. From 1938 to 1939 he was psychiatrist at the Student's Health Service at Harvard University. Appointed clinical director of the Pennsylvania Hospital in 1939, Dr. Hastings remained there until his induction into military service. During this same period he was also instructor in psychiatry at Jefferson Medical College. He assumed his duties at the University of Minnesota on March 16.

* * *

Dean Harold S. Diehl announces the appointment of Dr. Robert A. Aldrich and Dr. Clifford G. Grulee, Jr., to special teaching assistantships in Pediatrics, and Dr. Charles U. Culmer to a similar post in Surgery. Dr. Aldrich holds the Bachelor of Arts degree from Amherst College and the Doctor of Medicine degree from Northwestern University Medical School. Dr. Grulee holds the Bachelor of Arts degree from Wayne University and the Doctor of Medicine degree from Northwestern University Medical School. Dr. Culmer holds the Doctor of Medicine and the Doctor of Philosophy degrees from Northwestern University. The funds for the support of these special assistantships have been provided by the Rockefeller Foundation as part of its program to aid in the development of selected young men whose preparation for teaching and research posts was interrupted by military service. Additional appointments are under consideration in Surgery, in Neuropsychiatry, and in Preventive Medicine and Public Health.

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FACIAL INJURIES

(Continued from Page 239)

it aids in the acts of swallowing and coughing. The hemoglobin should be brought rapidly to normal by means of repeated transfusions in all cases in which the viability of important bone fragments or of large soft tissue flaps is in question. Oxygen can be administered through a nasal catheter or tracheotomy tube during the first postoperative days for the same reason. Even in severe facial injuries the patients should be out of bed for intervals on the first or second postoperative day if possible. Every effort should be made to prevent stasis and atelectasis. The postoperative use of penicillin and sulfadiazine undoubtedly helps prevent pulmonary complications.

When the jaws are immobilized a liquid diet becomes necessary. A high caloric liquid diet with supplemental vitamins is given. It is well to chart the patient's weight so that any undue loss can be noted. As a general rule, the patients lose weight the first week and thereafter maintain that weight or gain to their previous level.

Severe facial injuries are a psychiatric as well as a surgical problem. Since the patients are made ambulant as early as possible they are encouraged to circulate about the wards. They must not be allowed to develop seclusive trends.

CANCER DETECTION CENTERS

(Continued from Page 269)

feasible, clinics financed and aided by the Minnesota Cancer Society, will be extended to other communities as initiation, organization, and approval by the County Medical Societies is forthcoming. The Committee wishes to make it clear that at any time a group of physicians decides to establish a clinic, without the financial help of the Minnesota Cancer Society, it is perfectly free to do so provided it has the approval of the local County Society.

An interesting observation was the experience noted in Philadelphia[6] where over 70 per cent of the 2,552 patients examined in one year in the detection clinics were referred to their family physicians for some physical defect or other, not necessarily neoplastic in nature. Some of these clinics were originally established on the basis of one evening clinic a week, and grew with experience and demand. The experience of cancer detection clinics in Chicago[7], Milwaukee[2], New York[3], Philadelphia[4], and Los Angeles[5], testify to the value of periodic examinations of apparently healthy adults for cancer or its precursors.

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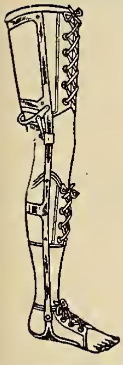

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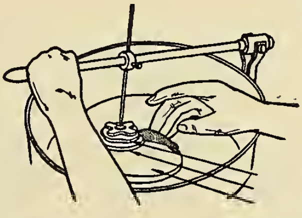

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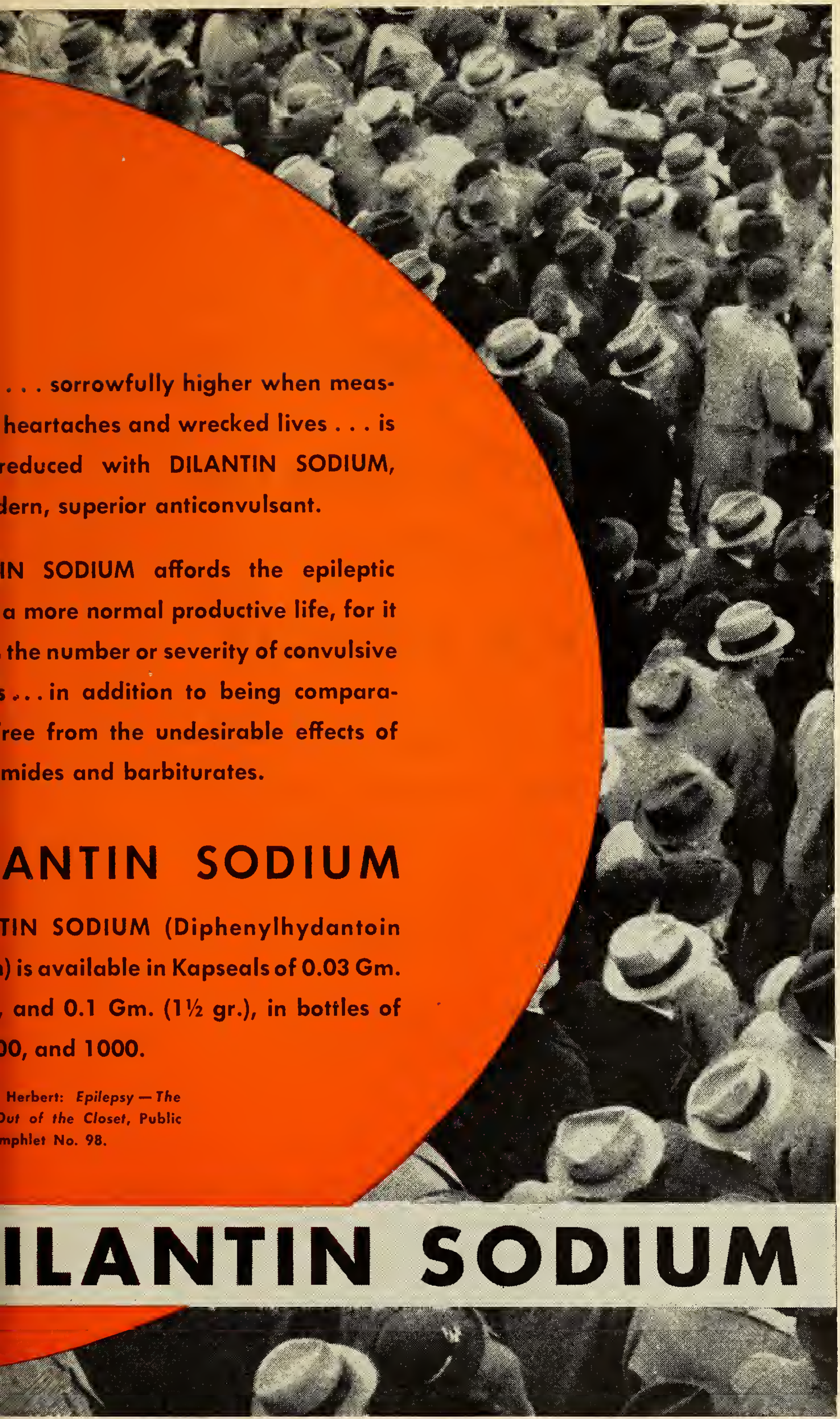. . . sorrowfully higher when meas-
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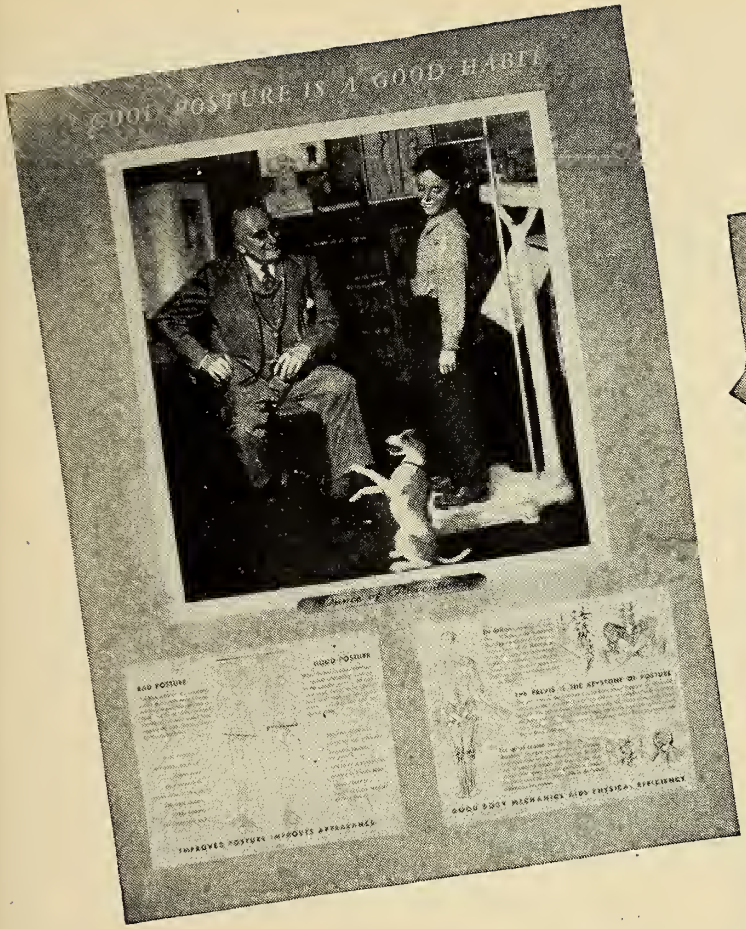
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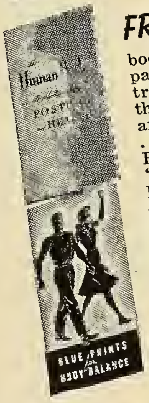
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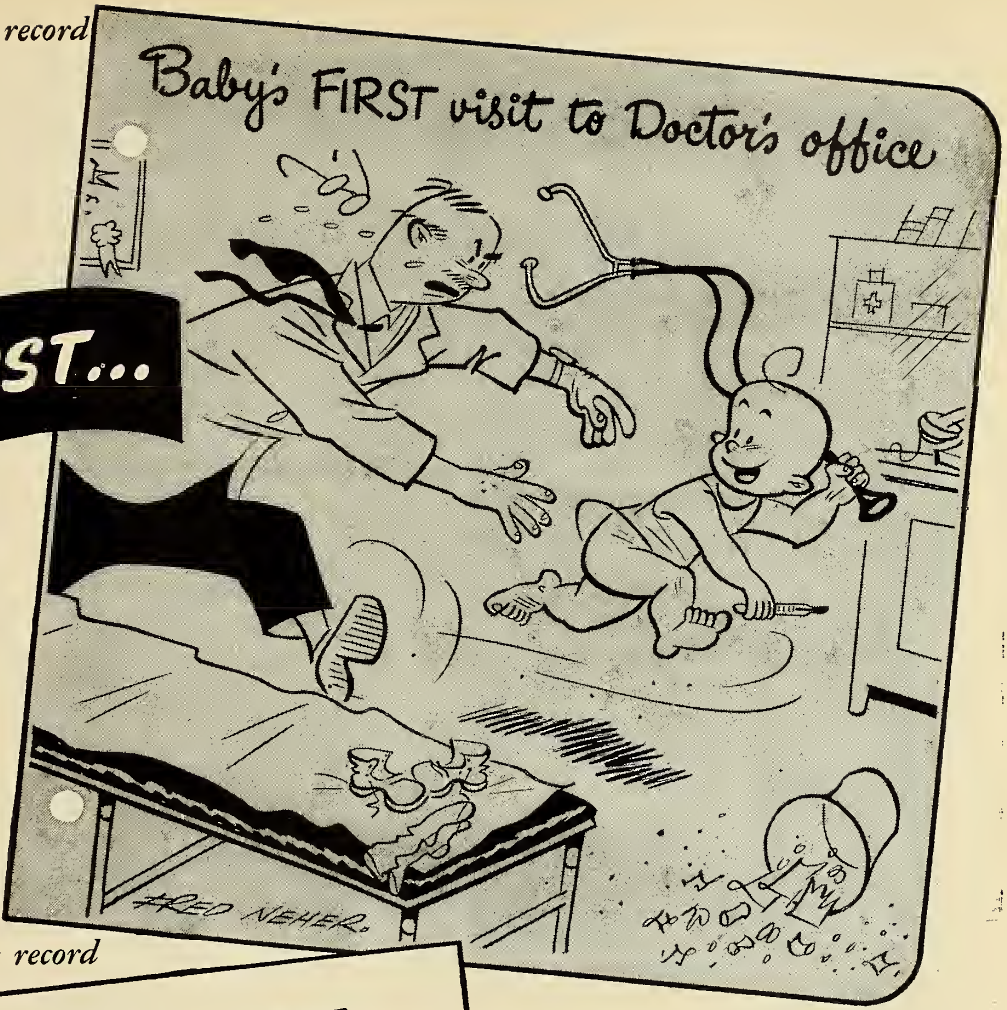
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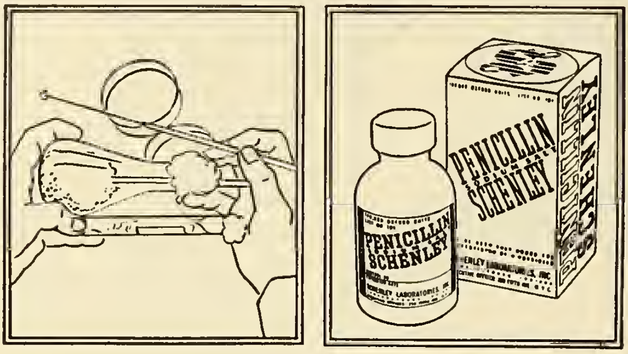

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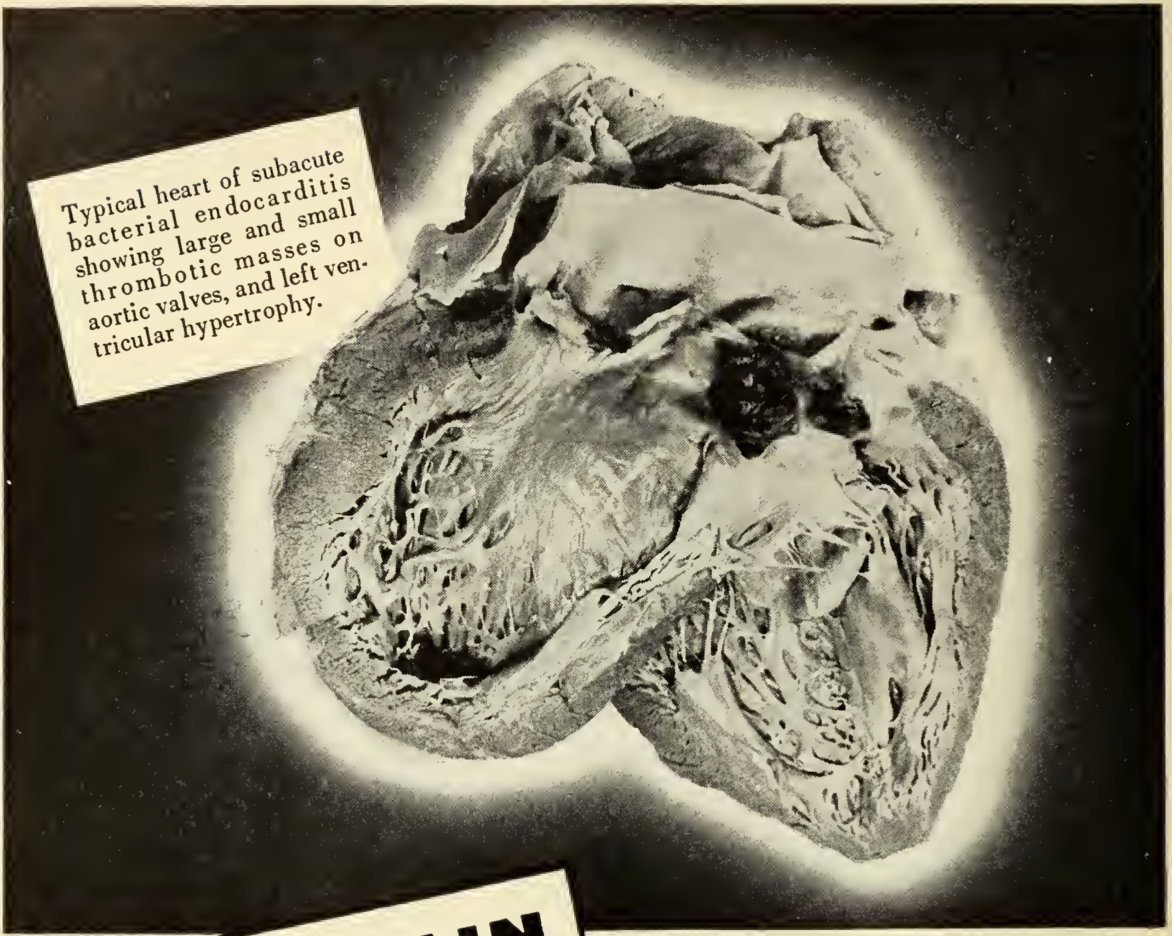

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Volume 29 **April, 1946** **Number 4**

CHOLECYSTECTOMY: ITS ORIGIN AND PRESENT STATUS

JUSTUS OHAGE, M.D.
Saint Paul, Minnesota

THIS year, 1946, marks the sixtieth anniversary of the first—and incidentally successful—cholecystectomy performed in the United States. The operation was done in this city, Saint Paul, Minnesota, at St. Joseph's Hospital.[8,11] The date was September 24, 1886. I admit to a special interest in this operation and to the origins of cholecystectomy because the operator on this occasion was my father, Justus Ohage, assisted by Drs. Nelson, Schulin, Dedolph, Denny and Welsh, also of this city.

This year also marks the hundredth anniversary of the birth of the surgeon who performed the very first cholecystectomy.

Today cholecystectomy is a common — one might almost say routine—operation. It has been performed many thousands of times both in this country and abroad. Yet a little more than sixty years ago it was a question whether it could or should be done at all. It is interesting also to note that cholecystectomy has been a fairly stable operation. Except for general improvements in operative technique, especially with regard to asepsis, we are doing it today in much the same fashion that it was done by European and American surgeons who first attempted it.

I shall take this occasion, therefore, to recall for contemporary as well as historical interest the origins of cholecystectomy. While I do not pretend in any sense to be a historian of medicine, I am persuaded to the practical and useful aspects of medical history. The editors of the newly organized *Journal of the History of Medicine and Allied Sciences* have written aptly in an introductory editorial:[10]

> "The historical approach is invaluable in comprehending the nature of difficult problems. We must have a knowledge not only of the actions of the past, but of the mental struggles, the philosophical conflicts that preceded action."

From that approach I wish to review in some detail the early classical contributions to cholecystectomy and its forerunner, cholecystotomy.

Credit for performing the first successful removal of the gall bladder[4] goes to the surgeon Carl Johann August Langenbuch[6], the hundredth anniversary of whose birth occurs this year. Langenbuch was born in Kiel, Germany, in 1846. After graduation from the University of Kiel in 1869, he went to Berlin, where he began his career as an assistant in the Bethany Hospital. From 1873, until his death in 1901, he was an important figure at the Lazarus Hospital. He was a zealous worker in several fields and published much. To his name is attached the research which eventuated in nerve-stretching procedures in tabes. He also worked extensively in the study of diseases of the liver and gall bladder; his "Surgery of the Liver and Gall Bladder" was published in 1894. He was among the first who dared to resect a lobe of the liver. He dealt also with hydatids of the liver and the treatment of seriously exposed large blood vessels with zinc chloride paste. But we remember Langenbuch tonight as the first surgeon who successfully extirpated the gall bladder.

I quote now from Langenbuch's discussion and

Presidential Address before the Ramsey County Medical Society, Saint Paul, Minnesota, January 28, 1946.

description of this first successful case. This paper, in German, appeared in the *Berliner Klinische Wochenschrift* in 1882 under the title: "A Case of Extirpation of the Gall Bladder in the Treatment of Chronic Gallstones: Recovery."[6] In passages that reflect the "mental struggles, the philosophic conflicts that precede action," Langenbuch writes:

> "The surgery of the gall bladder is still in the infancy of its development, but it does exist and the names of Petit, Thudichum, M. Sims, Kocher, G. Brown, Lawson Tait, König and others are in a general way associated with it. Concerned with stone formation, they have until now gone only so far as exposing the gall bladder freely and have been satisfied to widen fistulas and extract stones whenever hydrops or empyema of the gall bladder call for an operation. . . . They have busied themselves with the product of the disease, not the disease itself."

Langenbuch himself first became seriously interested in the problem in 1874 when he encountered a particular case of a forty-year-old man with insidious gallstones. He was prompted to undertake a series of animal experiments which brought him to the conclusion that:

> "Of all abdominal operations to which laparotomy is the prelude, extirpation of the gall bladder with preliminary ligature of the cystic duct appears among the least hazardous to attempt."

In June, 1882, shortly after the conclusion of his experiments, Langenbuch was called into consultation by Dr. N. Meyer to see a forty-three-year-old patient, Mr. D., a magistrate secretary in Berlin, who was suffering from acute gallstone disease. Langenbuch reports his history thus:

> "He had endured his first mild attack in 1866, but recovered. Thereafter attacks came more frequently and jaundice increased. He had taken the cure at Carlsbad for three years without success. The first year he had weighed 89.5 kilograms, the next year 75 kilograms and now only 52.5 kilograms (126½ pounds). For the last nine months the recurrent pain was so intense that he had to be maintained on increasing doses of morphine. He was very depressed, he constantly complained, his strength was failing and without morphine he could not leave the house. He had to give up his employment and his future indeed looked black."

Langenbuch explained the risk and the possibilities of the projected operation, cholecystectomy, to the patient. On July 10, 1882, the patient entered the Lazarus Hospital and asked Langenbuch to undertake the operation. The patient was kept in bed for five days, during which time he suffered two acute exacerbations of pain.

The operation was scheduled for July 15, 1882, and did indeed take place on that day. "As demanded by the novelty of the case," writes Langenbuch, "preparations were made for carrying out the operation with all aseptic precautions." At this point we may recall that the modern era of surgery, introduced largely by Joseph Lister, was still very young and the distinction was not altogether clear between antiseptic surgery, employing carbolic acid dressings and spray, and aseptic surgery, emphasizing the exclusion of contaminating agents by the practice of absolute cleanliness. Lister's famous paper "On the Antiseptic Principle of the Practice of Surgery" had appeared only fifteen years previously, in 1867.

With aseptic precautions as they were understood in 1882, then, and with the assistance of Dr. A. Martin and Prof. Dr. F. Busch as well as the presence of other guests, Langenbuch began the first successful cholecystectomy. He has described the operation and its results as follows:

> "The operation proceeded smoothly, through a T incision. The gall bladder was found to be massively full of gall and was emptied by aspiration with a syringe. Two chestnut size cholesterin gallstones were found. When the gall bladder was detached from the liver, a small venous bleeding occurred. This was controlled with a catgut stitch. . . .
>
> "After the operation the patient felt no pain and slept well the following night. Next day his pulse and temperature were normal; he felt no pain and he smoked a cigar. He left his bed on July 27. His old pain had not recurred up to mid-November. He had gained 13 kilograms in weight and he no longer needed morphine."

At this time Langenbuch felt that he had answered the physiologic and technical questions concerning the feasibility of cholecystectomy in man. He wrote: "Clinically I believe we should be alert to extirpation of the gall bladder, with preliminary ligation of the cystic duct, as the least dangerous and most hopeful method for the relief of many pathological processes arising in these organs." Experience has justified his statement.

Within four years after Langenbuch's first cholecystectomy, the operation was performed nine times, with eight recoveries, a mortality rate of 11 per cent.[9] The operation in this city, the first in the United States, was the ninth in the world. Five were performed by Prof. Langenbuch, with one death, two by M. Thiriar, both successfully, one, successfully, by Courvoisier.

Obviously, however, cholecystectomy was not the only surgical procedure entertained for relief of diseases of the gall bladder. Its immediate prodecessor was cholecystotomy. Credit for the first cholecystotomy for the removal of gallstones[4] has been assigned to an American physician, John Stough Bobb[2] (1809-1870), who reported a case of lithotomy of the gall bladder in the Transactions of the Medical Society of Indiana for 1868. The operation of lithotomy for the removal of gallstones had been proposed in the 18th century by the French surgeon, Jean Louis Petit[1] (1674-1750), who lectured on surgery at Paris and devised many operations. He suggested that if the gall bladder was dilated and adherent to the abdominal wall, it might be punctured and stones extracted with a long forceps. Similarly, fistula might be dilated for this purpose. Vogel, a surgeon of Lübeck, is said to have performed this operation in the 18th century and considered it one of "the very finest surgical operations." Borrichus[12], in the 17th century, observing many fatal cases of "dropsy of the gall bladder" from impacted gallstones, had among others raised the question of surgical interference. Far earlier, in antiquity, Hippocrates and Galen gave descriptions of gallstones and diseases dependent on them.

However, the classical description of cholecystotomy and in fact the invention of this name for the operation itself is ascribed to James Marion Sims. Sims was an American, born in 1813 in South Carolina. He practiced in Alabama and New York. Sims was one of the early presidents of the American Medical Association (1876). He later moved to Europe where he was made an honorary fellow of the obstetrical societies of London, Dublin and Berlin. He died in 1883. His classical "Remarks on Cholecystotomy in Dropsy of the Gall Bladder"[12] were published in the *British Medical Journal* in 1878.

In this paper Sims reports the case of an American woman, aged forty-five, a resident of Paris, on whom he performed the operation of cholecystotomy. The date was April 18, 1878. This patient had all the symptoms of acute mechanical obstruction of the gall bladder. She is described as being mahogany colored with jaundice. "The benefit of the operation," Sims reported, "was shown by immediate relief of pain, itching, nausea, vomiting and in the production of stools natural in color and odor." Unfortunately, however, the patient died eight days after the operation, due to hemorrhage. Sims considered the operation nevertheless a "triumph for Listerism, for postmortem examination proved that there was not the least trace of peritonitis or other untoward complication to be found as a direct result of the operation."

In the course of the operation, under ether anesthesia, Sims amputated a portion of the gall bladder protruding through the incision. Apparently it did not occur to Sims to remove the entire gall bladder. Lacking Langenbuch's extensive studies he may have been extremely doubtful whether life was compatible with the absence of the gall bladder. At any rate he states: "It will be better to incise the gall bladder rather than to remove any portion of it."

I quote now a few pertinent statements from Sim's paper, again illustrating the "mental struggles, the philosophical conflicts that precede action" in the direction of gall-bladder surgery. Sims wrote:

> "I believe the operation is unique. Is it justifiable? I think it is because it is an imitation of the process adopted by nature in all cases in which recovery takes place. Death is absolutely certain in every case where the gall ducts are mechanically obstructed unless an outlet be obtained either into the alimentary canal or by a fistulous opening externally through the abdominal wall. . . . But this case proves that it is not necessary to wait for the tedious efforts of nature. . . . Were I called on to operate again under similar circumstances I would not procrastinate it a day after the diagnosis was fully established. For it is certain that the longer it is put off, the more the blood becomes poisoned by the bile and the more the chances of recovery are diminished."

"It is too much the fashion, nowadays," wrote Sims in 1878, when Listerism was making possible operations that would have been considered absurd a few years previously, "to coin new names for old operations. But this is a new operation and we must find a name for it. Cholecystotomy (from the Greek, "gall," "bladder" and "incision") will answer." He rightly predicted that cholecystotomy would "open a great new field in the domain of abdominal surgery."

The first successful case of cholecystotomy with recovery, five weeks after operation, was performed by Kocher[5] in June, 1878.

Experience over more than sixty years has now demonstrated that cholecystectomy as introduced by Langenbuch rather than cholecystotomy devised by Sims is the more useful and probably the less hazardous operation, though each has its place. Very recent statistical studies appear to bear this out. In a series of 332 cases of acute cholecystitis reviewed by B. C. Smith[13] in 1945, cholecystectomy was performed on 223 patients with a mortality rate of 3.5 per cent, and cholecystotomy was performed on 103 patients with a mortality rate of 11.6 per cent. In another series of 123 cases of acute cholecystitis reviewed in 1945 to determine the comparative value of early (that is, within seventy-two hours) and late operative intervention, McGuigan[7] concludes that when delay results in improvement of the condition of the patient, cholecystectomy is to be preferred to cholecystotomy and seems to be better borne than the less radical operation. The average mortality in this series was 12.7 per cent for the early operations; 2.38 per cent for the delayed operations.

In 1946, then, the year marking the sixtieth anniversary of the performance of the first cholecystectomy in the United States and the hundredth anniversary of the birth of the surgeon who first performed this operation, we need conclude nothing more elaborate than to offer affirmative testimony that the earliest hopes as to the utility of this operation have been amply confirmed. Would that all surgical hopes were as fully justified.

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SOCIALIZE EVERYTHING OR NOTHING

On all sides one hears: Why does the medical profession oppose socialized medicine? Not all of the profession does. Those who do oppose it do so because they think, with good reason, that it will not work as well as the present system of practice *unless everything else and everybody else is "socialized" also.* Their good reason is the way it has failed to work well in countries where it has been tried.

There seems little cause to "socialize" medicine and to stop there. Free medicine is now working well, advancing, making progress, as everyone knows, in a free economy. Should we "socialize" medicine and not the patients? Should we "socialize" medicine and not the manufacturers who make the drugs, the appliances, the automobiles, the surgical instruments, the biologic products which medicine uses? And how about the labor unions whose members make the things that doctors need? Shall they be "socialized" also?

If this country is heading toward conversion to a socialist republic, we had better know about it. If it is true, as Lincoln said, that we cannot exist half slave, half free, it seems absurd to think we can exist half socialized, half free, no matter who says so. We paid the price of a civil war to settle the first question—what price this one? An answer to this seems called for.

In homely phrase, it's "whole hog or none." Medicine is only a tiny, if nubbly, minority of the electorate, probably not really worth the trouble to socialize—except as an experiment, a trial balloon so to speak. If it can be "socialized," if the acceptable political and other technics can be thus worked out as, for instance, they were in the "laboratory war" in Spain, then the other professions, as well as business and manufacture, can be subsequently "blitzed." Underneath the double talk lies the single objective.

Well, if it is to be that way, maybe we had better think about it. Things like the Wagner bills, the Pepper bill, E.M.I.C., are handy tools to toss into the machinery of a free economy. Perhaps nobody but the doctors will object to them—until it is too late. Seen against the background of the recent elections in Britain, the rising tide of socialist influence in Europe, the growing dominance of labor in American politics, it is not surprising that attempts should be made, under whatever guise, to convert this country to a socialist republic. Technics of boring from within established political parties are well known. Confusion in the popular mind between socialism, communism, democracy and republicanism has been worse confounded by attempts to explain their differences.

The first great American dependency was created following the panic of 1929. People learned to look to ever-loving government for their very existence in many cases. The myriad alphabetic agencies spring up with sprightly benevolence during the liberation period of Congress to assume the guardianship of the individual rights and privileges of the taxpayer-citizen in a difficult era, to be later superseded by the regulatory governmental mechanisms of the war years. Crisis followed serried crisis for some reason, lurid interagency civil war filled the citizen with respect for constituted authority as soon as he recovered from his nausea.

Now it is proposed to lure the voting taxpayer into forgetfulness by giving him ever-loving government medicine, "socialized" medicine. You don't believe it? Well, look at H.R. 3293 or S. 1050. Don't bother your congressman or senator to send you a copy of the bills. Don't you know there's a—peace on? Everything is lovely now.—Editorial, *New York State Journal of Medicine*, 45:2401, (Nov. 15) 1945.

ACUTE LESIONS OF THE ABDOMEN

Diagnosis and Treatment

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WHEN attempting to establish a diagnosis in the case of a patient complaining of acute abdominal distress, one must consider many possible medical as well as surgical conditions.

Frequently the signs and symptoms are sufficiently clear to enable one to arrive quickly at a correct diagnosis. If the case is not typical, then by the process of elimination, by the assistance of laboratory tests, and by a careful study of the findings the nature of the disease may be determined. Often the problem is not solved until an exploratory operation has been performed, and then the pre-operative diagnosis may be proved incorrect.

Certain medical conditions may closely mimic surgical diseases of the abdomen, and one must guard against confusing the two. In children especially such diseases as acute pyelitis and pneumonia are apt to simulate appendicitis. A careful study of the lungs in an early case of pneumonia may fail to reveal any characteristic findings, and the child may only complain of abdominal pain. Elevation of the temperature and leukocyte count occur in both. There may be abdominal tenderness but seldom rigidity in pneumonia. The accessory muscles of respiration in the nose may be activated in acute pulmonary lesions. Repeated studies of the urine may show pus and, along with a high fever and chill, point to pyelitis.

Several months ago I performed a cholecystectomy on a woman thirty-eight years of age who had been under treatment for coronary disease for a considerable time. She had suffered repeated attacks of severe substernal pain radiating to the right arm. Electrocardiograph studies made by the patient's physician during and shortly after the attacks had apparently confirmed the diagnosis of coronary disease. It is a well-known fact, however, that acute biliary attacks may alter the electrocardiographic tracing so as to give the picture of coronary disease. Cholecystectomy was performed, a large number of stones were removed, and the patient entirely relieved of pain. To further confuse the problem, cholecystitis conditions and coronary disease are occasionally associated.

Acute enteritis, commonly termed "intestinal flu," may so closely resemble acute appendicitis that it is impossible to establish a correct diagnosis without resorting to surgery. In a few instances an acute gangrenous appendix develops within twenty-four hours or less from the time of onset of an attack of acute enteritis. In children one may be greatly concerned as to the advisability of operation in certain of these cases. The past year there has been a very high incidence of acute enteritis, and still there is no solution as to its etiology. Years ago it seemed to occur in mild epidemic form during the summer months; more recently it appears to have no seasonal incidence.

Numerous other medical conditions, such as acute lead colic, tabetic crises, acute ruptured Graafian follicle, allergic disturbances, and gastrointestinal hemorrhage, may occasionally puzzle the diagnostician.

Among the more common surgical diseases there are: appendicitis, cholecystitis, pancreatitis, mesenteric thrombosis, perforated ulcer, traumatic lesions, intestinal obstruction (including volvulus, intussusception, strangulated hernia and neoplasms), torsions of the omentum, regional enteritis, and congenital anomalies. Then, too, acute lesions of the pelvis, such as ruptured tubal pregnancy, strangulated and ruptured ovarian cysts, acute salpingitis and rupture of the uterus must be considered. Likewise a number of lesions of the genito-urinary tract, as renal and ureteral calculi and pyelitis, may confuse the examiner.

Acute Perforated Ulcer

The appearance of the patient may afford some help in arriving at a correct diagnosis. In the case of an acute perforated ulcer, he may sit up in bed with his knees drawn up, finding it too painful to lie down. He may be suffering severe pain, requiring morphine for relief. This, of course, should not be given until the diagnosis is fairly definitely determined. He may give a history of an ulcer with a sudden onset of a gun-

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Expansion of address before the Saint Paul Surgical Society, January 17, 1945.

shot type of pain following some dietary indiscretion such as drinking beer on an empty stomach. The development of a boardlike rigidity of the abdomen within an hour or two of the onset and the finding of a gas bubble under the diaphragm by x-ray confirm the diagnosis and call for immediate operation.

The abdomen is opened preferably under spinal anesthesia. The perforation is located and closed by three or more interrupted chromic sutures and covered by an omental tag, if possible, and 10 Gm. of sulfathiazole in saline is left in the peritoneal cavity after its soiled contents have been aspirated. I have been closing the abdomen without drainage in patients operated upon within twelve hours of perforation. Duodenal suction and intravenous glucose and saline are used as indicated.

Acute Pancreatitis

Acute pancreatitis is fortunately of rare occurrence as it is usually fatal. Its onset is characterized by a severe upper abdominal pain, shock, prostration, high fever, and high leukocyte count. Surgery has never proved very successful.

On opening the abdomen in a recent case, we found the typical condition of acute pancreatitis with free fat in the peritoneal cavity and a huge hemorrhagic pancreas. We followed the accepted procedure of placing drains to the pancreas, but the case terminated in the usual manner, despite penicillin and sulfonamide therapy. Some internists advocate medical treatment of acute pancreatitis after a diagnosis has been established by the amylose test.

Acute Cholecystitis

Two schools of thought have existed among the surgeons of this country regarding the treatment of acute cholecystitis. Some advocate immediate operation, and others favor a more conservative treatment and delayed operation. It is my belief that no set rule can be used but that each case must be treated according to the duration, severity, and progress of the disease. If the toxemia is subsiding, I prefer to wait a few days and then operate. If the fever and leukocyte count are rising, indicating the development of empyema, delay in operating may only lead to further complications.

As a rule, acute cholecystitis does not offer a difficult problem in diagnosis. The symptoms are usually confined to the right upper quadrant and may consist of a steady severe pain or attacks of colic, with a fever of 102 F. or higher and a high leukocyte count often of 15,000 to 25,000. If empyema develops, a chill may occur. There is localized rigidity and marked tenderness. The pain may remain localized or be referred to the right scapular region and usually requires morphine for relief.

In the elderly and the greatly debilitated, including those who suffer a severe toxemia, drainage rather than removal of the gall bladder may be the safer surgical procedure. Also, in the presence of a marked inflammatory reaction that has involved the ducts and obscured the anatomy, cholecystostomy may prove a wise choice. Otherwise, we prefer to do a cholecystectomy, working from the ducts upward. A small drain is removed after five days. For the past two years we have had our patients out of bed in most instances after twenty-four hours and walking after the second postoperative day. We have reduced the use of duodenal suction and intravenous fluids, believing that early ambulation, by stimulating peristalsis and the circulation, has permitted the patient better to tolerate oral feeding and to maintain normal digestion and that speedier healing of the wound has resulted.

Intestinal Obstruction

The surgical mortality of this condition for years was listed as close to 50 per cent by many of our leading hospitals. Improved methods of diagnosis, a better understanding of the principles of the treatment involved, and earlier operations have considerably lowered the surgical mortality in the past few years.

In any acute abdominal complaint a careful search should be made for the presence of operative scars. An operation performed many years previous for a ruptured appendix may be the cause of an acute intestinal obstruction. Failure to carefully peritonize the cervical stump following a subtotal hysterectomy may give rise to an intestinal obstruction. Similarly, if the gall-bladder bed is not peritonized after a cholecystectomy, a loop of gut may become adherent and obstructed. Acute obstruction from cancer of the bowel is one of the most commonly seen lesions of this type. Volvulus in the elderly, intussusception in children, and strangulated hernia at any age are other causes of obstruction. Separation of the wound after an operation may allow a small loop of bowel to become obstructed, or a gallstone may perforate into the small intestine, giving rise to similar trouble.

One reason the mortality rate is high is because these cases often come to the operating room too late. When marked symptoms of toxemia are present, the diagnosis is not always easy to make because the symptoms may be atypical at first. The temperature, pulse, and respiration may be normal. If the obstruction is high, vomiting may occur early, but if it is in the colon, the symptoms are more of obstipation and a failure to pass gas. Colicky attacks of abdominal pain may occur, visible peristalsis may be seen, and distention is usually present. A flat x-ray plate of the abdomen may show the typical stepladder appearance of intestinal obstruction. So-called fecal vomiting, the inability to obtain results from enemas, and the failure of mineral oil to pass are all indicative of obstruction.

If a complete mechanical obstruction does not exist, the Miller-Abbott tube may relieve the condition, but its manipulation requires adequately trained personnel. If a true obstruction is present, the sooner it is surgically relieved the better.

Regional Enteritis

Regional enteritis, first described by Krohn and his associates at the Mount Sinai Hospital in New York in 1932, is now a well-recognized entity, although not commonly seen. This disease varies in its symptomatology and in the first phase may simulate acute appendicitis. In the second stage it may resemble acute ulcerative colitis, and there may be secondary anemia with fever and diarrhea. In the next phase obstructive symptoms occur, and finally multiple fistulae develop between loops of intestine or the bladder. The etiology of this condition remains unknown.

Surgical opinion is not unanimous regarding treatment, some preferring resection of the diseased intestine and others merely advocating sidetracking of the involved area. In some instances the appendix is removed and the regional enteritis overlooked at the primary operation. A persistence of symptoms then necessitates an x-ray study which may show the characteristic "string" sign appearance of the barium as it passes through the greatly diminished lumen of the bowel.

Mesenteric Lymphadenitis

Mesenteric lymphadenitis is another condition that may so closely simulate appendicitis that a diagnosis cannot be determined without operation. Fever, elevation of the leukocyte count, pain, tenderness, and nausea may occur. To confuse the picture further, it is most frequently seen in children and young adults. The pains are apt to occur on either side and to be fleeting in character; rigidity is uncommon. Tenderness may be bilateral. Because over 90 per cent of the patients I have operated upon in a series of nearly 200 cases have drunk raw milk, I believe this disease is possibly bovine in origin. In my experience it rarely is seen in city children who have been raised entirely on pasteurized milk. If, however, these children spend a summer or two on a farm and drink raw milk, they too may develop mesenteric lymphadenitis. This theory is contrary to that of Wolinsky who maintained that these glands are secondary to a respiratory infection and are similar to enlarged cervical glands in the neck.

It was my good fortune to hear the first paper given on this subject in this country which was presented by the late Doctor Leonard Freeman at Saint Paul in 1922 at a meeting of the Western Surgical Association. It was a classical paper, and little has been added to our knowledge of the subject since that time. Pathological study of the glands has failed to reveal the origin of the disease. The glands vary markedly in their size and number and are usually encountered in performing an appendectomy for an acute or chronic appendicitis. If the glands are markedly enlarged and numerous and appear definitely more responsible than the appendix for the symptoms, the patient or parents should be advised that symptoms may persist for some months. These patients should go on a careful hygienic regime; they should drink pasteurized milk, and they should take sun baths, especially exposing the abdomen until it is well tanned.

Mesenteric Thrombosis

The classical picture of a rather elderly patient, known to have heart trouble and, in particular, auricular fibrillation, taken with an attack of abdominal pain, and passing blood from the rectum, is characteristic of mesenteric thrombosis. The abdomen may be moderately distended and present a rather doughy appearance. The important thing is to operate at once before gangrene has become extensive and, as soon as the diagnosis is established, to start dicoumarol and heparin to prevent a further extension of the thrombosis.

Appendicitis

Once I wrote a paper the title of which was "Half a Million Deaths from Appendicitis." The purpose of this was to point out that, despite improvements in hospitals, medical schools, transportation, laboratories, anesthesia, and the training of nurses and doctors, the mortality rate from this disease rose from 9.7 per cent per 100,000 population in 1900 to 12.8 per cent in 1936 and that in thirty years approximately 500,000 persons had died of this disease in this country. Notwithstanding thousands of articles and lectures on the subject both to layman and the profession, two persons were dying of appendicitis every hour until the introduction of the sulfonamides and penicillin. These drugs have effected a great reduction in the death rate, which has dropped from about 17,000 a year to probably less than 10,000 this year. This figure is still much too high. If everyone suffering from appendicitis could be operated upon before perforation has occurred, 98 per cent would recover. One statistical study compiled before the sulfonamides were used showed that of seven persons suffering from appendicitis and taking laxatives, six would die of peritonitis if not operated upon before perforation took place.

The sulfonamides have changed this. Since 1942 I have used 10 Gm. of sulfathiazole in saline routinely in the peritoneal cavity in perforated appendices and have closed all cases the past three years without drainage. No deaths have occurred; there have been no complications and no purulent discharges; and patients are usually out of bed in two days. Spinal anesthesia is used regularly; suction and intravenous glucose in saline is used ordinarily for only a day or two. More recently penicillin, 20,000 units, has been given every four hours, but as results were satisfactory before, this has only been used as an additional safeguard.

This entire paper could be devoted to appendicitis, and there would still be much left for discussion. It is impossible to discuss the varied symptoms that so frequently mask the picture. It is important to remember that the leukocyte count and temperature can be normal in the presence of a gangrenous appendix; that often pain is slight and rigidity absent; and that if the appendix is retrocecal, tenderness may only be elicited by turning the patient on his left side with the knees drawn up and having him breathe deeply. Experience is perhaps the best teacher, but even those whose experience is great may be puzzled by the occasional case. As a rule, it is better to operate when in doubt. A high polymorphonuclear count usually calls for surgery. Of the various incisions, I favor the pararectus incision in which the rectus is retracted to the patient's left. A purse string of silk is used with inversion of the stump, and the incision is closed with fine chromic gut as sulfathiazole is dusted into the various layers.

Space does not permit discussion of various other interesting examples of the acute abdomen, such as hemorrhage, perforation and strangulation from congenital anomalies as a Meckel's diverticulum, or of perforation of a diverticulum of the jejunum or the sigmoid, torsion of the omentum, rupture of the liver, spleen, kidney, or intestine from trauma, and bullet or stab wounds of the various organs. From the standpoint of diagnosis and treatment, each of these conditions, as well as numerous others, presents definite problems that only serve to make this field of surgery perhaps the most intriguing and satisfactory.

When this subject was presented before the St. Paul Surgical Society, mention was made of the fact that early ambulation, the intraperitoneal use of sulfathiazole, the use of early oral feeding in preference to intravenous therapy, the replacement of enemas by mild laxatives and bathroom privileges and of bulky dressings by Mediplasts had simplified the work of our staff and improved our results. There is every indication that chemotherapy will play a still greater part in the future in lowering the mortality of acute abdominal conditions.

According to the Statistical Bulletin of the Metropolitan Life Insurance Company for February, 1946, the death toll from appendicitis dropped from 18,000 a little over a decade ago to 8,100 in 1943. Doubtless this figure has been lowered since 1943. The death rate fell from 9.9 to 6.1 per 100,000 from 1940 to 1943. Credit for this improvement is given to the use of chemotherapy in cases complicated by peritonitis and to the national publicity campaign which has warned against the use of cathartics and the importance of prompt medical attention in the presence of abdominal pain.

THE USE OF MYRISTYL-GAMMA-PICOLINIUM CHLORIDE IN SURGERY

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ONE of the oldest problems of surgery is skin disinfection and the attempted disinfection of wounds. Before the application of germicides, gross dirt and organic matter must first be removed, as they would inactivate the great majority of germicides. Preliminary cleansing with tincture of green soap is necessary for removal of gross skin contamination. Nevertheless Trueta[31] and Barnes[4] have had excellent success with detergents which cleanse the wound and also are bactericidal, while innocuous to living tissue. One of the detergents which they used, was cetyl-trimethyl-ammonium bromide, a member of the group of quaternary ammonium salts.

The harsh chemicals which are used for skin sterilization do a great deal of harm in treating open wounds and burns, besides forming a thicker, less pliant scar.[9] In 1908 Grossich[12] introduced tincture of iodine for skin disinfection, but its activity has been questioned.[28,29 30] Of the heavy metals, mercury has been the most popular. Later, simple mercury salts were replaced by organic mercurials, as metaphen, merthiolate, furmerane, and phenyl mercuric nitrate, which were found to be many times more powerful.[5,11] Phenol causes skin necrosis. Lysol is a 50 per cent solution of a mixture of ortho, meta, and para-cresol and is three times more bactericidal than phenol, and only slightly toxic, though not completely innocuous.

Halogenation trebles bactericidal action of coal tar acid dyes, but it decreases solubility. Dettol is one of this series. Mercresin[8,21] is alcohol-acetone solution of penta-cresol and an organic mercurial, ortho-hyroxy-phenylmercuric chloride (mercarbolide.) Pentacresol is a mixture of five isomeric amyl cresols, derived from alcohol and cresol. While both components are strong, Maddock reports a synergistic action of the two, which is 200 to 300 per cent greater than the sum of the action of the two. Another disinfectant, which is somewhat weaker, is alcohol-acetone solution of tri-cresol and mercuric chloride, Novak's solution.[24] In 1935 Vaichalis and Arnold[32] showed that the solvent alone, 50 per cent alcohol and 10 per cent acetone, kills 96 per cent of the bacteria on the skin.

In an open wound or burn, none of the above chemicals has any use as they cause tissue damage, and devitalized tissue is an excellent medium for growth of bacteria. Iodine is very toxic to tissues and is inactivated by blood. The mercurials retain a fair percentage of their activity in serum protein, but they are extremely toxic toward leukocytes. Mild neutral soap solutions may be used, but tincture of green soap is far too toxic.[1,19]

Friedrich[10] in 1898 distinguished between fresh wounds, merely contaminated, and wounds in which inflammatory infiltration of the surrounding tissues has already occurred. He found that an interval of six to eight hours is necessary for multiplication of the bacteria and their invasion into neighboring tissues. Owing to extension of infection it appears highly unlikely that treatment of the surface of wounds will eradicate the infection. Remarkable healing of old wounds and infections can be accomplished by uninterrupted rest, immobilization, and light pressure, which principles have been described by Wangensteen and Koch.[20,33,34] In the past there have been several factors which have been considered as the possible cause for the non-healing of wounds, even uninfected wounds. Four factors have come into consideration. These are as follows: (1) removal of granulation tissue; (2) restricted circulation due to edema; (3) presence of a serum exudate; (4) lack of maintenance of compression to promote circulation.

Subsequently, prominent surgeons in the United States further improved the treatment of wounds. Reid[25,26,27] observed that healthy granulation tissue can overcome bacterial contamination and also that granulation tissue is very resistant to the spread of infection and should not be debrided or disturbed. Further, Reid[27] found that edema, causing restricted circulation, delayed healing of wounds, which was attributed to the exudation of serum and prevented the formation of a fibrinous medium necessary for growth of epithelial cells. Koch[20] has also focused attention on compression, not constriction, as a factor in the treatment of wounds, compound

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fractures, and burns to prevent loss of body fluid and maintain circulation.

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As early as 1916, Jacobs and Heidelberger[14, 15,16] described the germicidal activity of quaternary ammonium salts derived from hexamethylenetetramine. In May, 1935, Domagk[7] of the German I. G. Farbenindustrie published in the *"Deutsche-Medizinische Wochenschrift"* an article which showed further studies relating to germicidal power of quaternary ammonium salts. Though these salts are excellent detergents themselves, their action is reduced by the soaps. As mentioned above, during the Spanish Civil War (1936-38) Trueta[31] and Barnes[4] reported excellent results with their use, especially cetyl-trimethyl-ammonium bromide. In 1940 Miller and Baker,[22] and in 1941, Harrison and Miller[3] compared the *in vitro* properties of soap and certain cationic detergents. As soaps contain an alkyl radical with a negative charge, they are classified as anionic detergents. Cationic detergents were found to be more general inhibitors of bacterial metabolism than anionic detergents, according to measurements made in the Warburg manometric apparatus. Maximum inhibition was found with compounds of twelve, fourteen, and sixteen carbon atoms, lauryl, myristyl, and cetyl respectively.

Brown et al. have found that the use of phemerol (paratertiary-octyl-phenyl-diethoxy-dimethyl-benzyl-ammonium chloride) to be superior to tincture of green soap and alcohol, and cresol-mercurials, and halogens. Another member of the group of quaternary ammonium salts is cetylpyridinium chloride (Ceepryn), which also has been found to be very powerful.[13] Zephiran is the third quaternary ammonium salt on the market at the present.

Another quaternary ammonium salt is myristyl-gamma-picolinium chloride (quatresin). Dr. Marie Moorhead[23] at Ohio State University has done extensive bacteriological studies on quatresin and compared it with the other quaternary ammonium salts. Against staphylococcus aureus it is somewhat more powerful and is equally powerful against typhoid and dysentery.

Both tincture of quatresin, 1-500, in alcohol-acetone solution (50 per cent alcohol, 10 per cent acetone, 40 per cent water) and aqueous solution, 1-1000, are now available and have been used rather extensively on the surgical service at the Minneapolis General Hospital. At first the tincture was used for skin sterilization in minor cases only, and in a series of approximately one hundred cases, as insertion of Kirshner wires, Steinmann pins, Roger Anderson pins, and also the removal of metallic fixation, as nails, screws, etc., no infection developed postoperatively. Subsequently it was used as the routine disinfectant on the fracture and orthopedic services, and it has been used in approximately 300 major orthopedic cases. Also, it has been used for pre-operative preparation in about one hundred and fifty cases of abdominal surgery. The only infection encountered in this series occurred in an open reduction of a hip, with open arthrotomy, which proved to be far more tedious than usual and in which the infection appeared fifty days postoperatively. With hot packs and penicillin, the infection which proved to be caused by a hemolytic streptococcus, not an ordinary wound contaminant, cleared up in a few days.

Solution of quatresin has been used as packs for preliminary pre-operative skin cleansing. In about fifty cases of herniorrhaphy packs of solution of quatresin have been applied to the inguinal region for about twenty minutes, during which time the patient was shaved. This was done in patients who were excessively heavy and whose personal hygiene was poor. After the application of packs the routine skin preparation with tincture of quatresin was carried out. None of these cases showed any drainage or reaction at the site of the surgical wound. Aqueous solution of quatresin has also been used for irrigating minor abraisions and lacerations and about fifteen compound fractures. In a much larger series of compound fractures, thirty-five, treated by the technique in use at the Minneapolis General Hospital,[17,18] the skin was prepared with tincture of quatresin, and the irrigation of the wound was done with saline. No infection developed, though control is lacking as during the previous five or six years a large proportion of the compound fractures healed per primum, with infection in less than 10 per cent.[17,18]

Aqueous solution of quatresin has also been used rather extensively on the gynecological service. The solution is non-irritating and has been used as a vaginal pre-operative disinfectant in about one hundred cases. As the solution is colorless, a few drops of the tincture, which is tinted, have been added to obtain a colored solution in order to reveal the area which has been prepared.

Experimental

An attempt was made in the laboratory to determine whether irrigation of a contaminated wound with solution of quatresin could rid a wound of contamination to a greater extent than irrigation with physiological saline. Methods devised to study infection in animals always entail great difficulty in the control of many factors which influence the course of the infection. Control of virulence of the organism is only one of the factors which has to do with the creation of infections which are similar in different animals. Mice are usually used in assaying the potency of the culture. The organism may be introduced intraperitoneally with the various drugs to be tested being administered either orally or by the intraperitoneal route. By varying the number of organisms injected and the dose of the drug used, the comparative efficiency of the drugs can be assayed with a fair degree of accuracy.

An evaluation of the effects of bacteriostatic agents which are implanted in contaminated wounds is even more difficult. Organisms introduced into wounds of the skin, or introduced through a needle into the subcutaneous tissue, give rise to widely varying lesions in different animals. This is true even when frozen or lipholized organisms are used. The effect of the addition of the drug to be tested when added to such contaminated wounds has, in our hands, been impossible to interpret with exactness. A determination of the tension required to separate wound edges is of value if one is studying wound healing. As our criteria we chose to determine the presence or absence of the introduced organisms following the application of the drug used in the particular test.

Preliminary bacteriological studies on quatresin (myristyl-gamma-picolinium chloride), carried out by Dr. Marie Moorhead at Ohio State University, indicate that the drug can be diluted 1-85,000 and still be effective in killing a standard strain of staphylococcus aureus *in vitro*. The effective dilution of quatresin was reduced to 1-12,000 when 10 per cent horse serum was added to the culture medium. One would expect this effective concentration to be further reduced if the drug is placed in a wound where serum and blood are present in large amounts.

For our work, we chose the living animal, the dog, rather than the *in vitro* method of Dr. Moorhead. The test organisms chosen for our work was a hemolytic, coagulase-positive staphylococcus aureus freshly isolated from a fatal human bacteremia. Previously Altmeier and Gibbs[2] had shown that the staphylococcus is the most common wound contaminant, and accordingly it was selected. As it proved rather difficult to produce a virulent infection in dogs, the hemolytic variety of staphylococcus was used, which is a rare variety in wound infections. To adapt this organism to the dog, repeated intravenous transfers from dog to dog were carried out. A total of six passages was necessary before a small dose (1.0 c.c. of a 24-hour broth culture) would kill the dog in eighteen to twenty-four hours. This culture was maintained on agar slants in the icebox. It is recognized that this was not the ideal method of maintaining uniformly virulent organisms. However, since most of the animals had two wounds, one the donor site from which a bone graft was removed and the other the host, it was possible to have a control. In addition we were examining for the presence or absence of the organisms in the wound; therefore our interest was primarily in a strain of staphylococcus that was capable of existing in a control wound for at least twenty-four hours. Twenty-four hours before the wound was to be contaminated, the organisms were taken off the agar slant and transplanted to a tube of nutrient broth. This was then diluted 1-100, and 1.0 c.c. was injected into the wound. Repeated plate counts showed that the count never varied over a thousand organisms per c.c.

A series of experiments were carried out in which a bone graft was removed from the tibia of a dog and implanted into the femur, where it was held with two or three vitallium screws. Since treatment of compound fractures practically always involves the use of some internal fixation, which is a foreign body and tends to keep infection alive, it was thought that this experiment would reveal the difference in results obtained when a wound is irrigated with solution of quatresin or with saline. Also in some compound fractures it is advisable to leave large loose pieces of bone in the wound, as their removal would leave too large a gap and lead to non-union. The donor site was also inoculated and left untreated. Cultures from this area were always positive for staphylococcus aureus. The grafted site was then used as a test area, and cultures were taken forty-eight hours after treatment. A uniform proce-

TABLE I. QUATRESIN AS A DISINFECTANT IMMEDIATELY FOLLOWING OPERATION

Experiment Number	Inoculum Size	Infection Time	Therapy	Cultures†
1224	5,000,000	0	None	3 plus
	5,000,000	0	Quatresin	0
114	4,000,000	0	None	3 plus
	4,000,000	0	Quatresin	0
19	4,000,000	0	None	3 plus
	4,000,000	0	Quatresin	0
316	6,000,000	0	Quatresin	3 plus
319	6,000,000	0	Quatresin	3 plus
17	4,000,000	0	None	3 plus
	4,000,000	0	Saline	3 plus

†2 plus = 100-200 organisms per plate
3 plus = 200-500 organisms per plate
4 plus = 500-1000 organisms per plate

TABLE II. QUATRESIN AS A DISINFECTANT IN WOUND INFECTION

Experiment Number	Inoculum Size	Infection Time (hr.)	Therapy	Cultures
115	6,000,000	18	None	4 plus
	6,000,000	18	Quatresin	2 plus
2645	6,000,000	18	None	4 plus
	6,000,000	18	Quatresin	4 plus
11545	6,000,000	18	None	4 plus
	6,000,000	18	Saline	4 plus
2545	6,000,000	18	None	4 plus
	6,000,000	18	Saline	4 plus

dure was worked out for culturing the wounds. The wound was spread, and swabs were taken from the infected area. At least five swabs were individually introduced into melted agar, cooled at 45°C. and then poured into a petri plate. These five plates were incubated for forty-eight hours, and counts were made at the end of the incubation period. If the counts were from 500-1000, they were recorded as 4 plus; 200-500, 3 plus; and 100-200, 2 plus. The errors in this procedure are recognized, and little significance was attached to the results unless all five plates had fewer than ten colonies per plate. This was picked as our criteria since we were interested in sterilizing the contaminated area.

In Table I summaries of four animals are presented. The organisms were introduced immediately after operation. Quatresin solution was used in the form of an irrigant before the wound was closed. The time of contact of the germicide was approximately twenty minutes since that was the time necessary for the quatresin to run in. Besides the effect of the quatresin there was the added effect of mechanically washing the organisms out. To control this, one dog received a saline irrigation instead of the quatresin.

In these experiments the donor site was used as a control and received no therapy. Experiments number 316 and 319 were carried out in a little different manner in that the inoculum size was increased, and no control site was used. It will be noted that the increased size makes considerable difference in the efficiency of the quatresin. For this reason, the following experiments were carried out with the increased inoculum.

In the second set of experiments, the operation and infection were carried out as before. However, an eighteen-hour incubation period followed before irrigation with quatresin was started. From these data it was hoped that some conclusions could be drawn as to the efficiency of quatresin in combating postoperative infections.

From the preceding experiments one can conclude that it is impossible to sterilize a wound that is already infected with a hemolytic staphylococcus, especially, when the inoculum is as large as 6,000,000 organisms and the infection has persisted for eighteen hours prior to treatment. A series of experiments were then carried out in which the infection time was reduced to one hour. The errors of mechanically washing the organisms out of the wound before they had time to cause infection would then be partially eliminated.

In the next series of experiments the femur of the dog was exposed by separating the vastus lateralis muscle from the rectus femoris muscle. The inoculum was introduced into the wound, and one hour later the irrigation was carried out. Two days later the culture was taken.

Discussion

Tincture of quatresin has been found to be an excellent pre-operative surgical disinfectant, after Dr. Moorhead had demonstrated its strong germicidal action by laboratory methods and compared it with other quaternary ammonium salts.

The tincture of quatresin has been found to be an excellent skin disinfectant and has been used extensively at the Minneapolis General Hospital.

Also tincture of quatresin has been used as a skin disinfectant in the Surgical Laboratory at the University of Minnesota. Dr. Baronofsky of the Department of Surgery at the University of Minnesota has used it in about 150 cases of in-

TABLE III. QUATRESIN AS A POSTOPERATIVE DISINFECTANT

Experiment Number	Inoculum Size	Infection Time (hr.)	Therapy	Cultures
325	6,000,000	1	Saline	4 plus
327	6,000,000	1	Saline	4 plus
225	6,000,000	1	Quatresin	3 plus
313	6,000,000	1	Quatresin	2 plus
315A	6,000,000	1	Quatresin	0
331A	6,000,000	1	Quatresin	0
331B	6,000,000	1	Quatresin	0
47A	6,000,000	1	Quatresin	0
47B	6,000,000	1	Quatresin	0
423A	6,000,000	1	Quatresin	0
423B	6,000,000	1	Quatresin	0
424A	6,000,000	1	Quatresin	1 plus
424B	6,000,000	1	Quatresin	0

testinal anastomosis carried out in the laboratory. There was no case of infection and all the wounds looked cleaner and showed better healing than when the old method of iodine, which was later removed by Richardson's solution, was used.

The aqueous solutions of quatresin can be used freely on any open surface and in the early stages it is definitely superior to saline. No toxic reactions have been found from its use. In one experiment it was injected into the hip joint of a dog and microscopic slides showed the cartilaginous surfaces to be the same as on the control side. Similarly the solution was poured into a trephine opening in the skull. Except for surgical intervention there was no reaction.

Even though infections have been prevented by its use in the early stages, it has no effect on late case. For such cases one must rely entirely on the principles of rest, immobilization and light pressure, after a proper debridement has been done, all of which are indispensable also for treatment of early injuries.

Summary and Conclusions

An attempt was made to evaluate quatresin (myristyl-gamma-picolinium chloride) with respect to its efficiency as a disinfectant in surgical procedures to eliminate infections, both in wounds without foreign bodies and wounds with foreign bodies, i.e. screws and bone grafts.

1. It has been shown that wounds infected with 6,000,000 organisms, per c.c. can not be sterilized by the use of quatresin when it is used as an irrigant immediately after surgical manipulation, providing a bone graft which is a real foreign body, is implanted into the wound. If the inoculum is reduced to 4,000,000 organisms per c.c., quatresin will sterilize the wound.

2. If treatment with quatresin is delayed eighteen hours after the introduction of the organisms, there is no effect, as with any other disinfectants.

3. If quatresin is used in the form of an irrigant one hour after surgery, varied results are obtained. The tables show the superiority of quatresin over saline.

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TUBERCULOUS PERICARDITIS

Incidence at Glen Lake Sanatorium

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TUBERCULOSIS of the pericardium has been called the least common and the most serious of the tuberculous infections of the serous membranes and was considered a rare disease by the early writers. Rokitansky is credited[7] with the first mention of it in literature in 1852 and the first clinical case was reported in 1872. Osler[7], in 1892, reported seventeen cases and observed that only twenty-seven references had appeared in the *Index Medicus* to date and that only five cases had been described in the *Transactions of the Pathological Society of London.*

The literature after 1900 shows an increasing number of reports with a fairly consistent rate of occurrence. Isolated case reports became more numerous and the collected series indicate a fairly constant incidence of about 1 per cent in all autopsies and 4 per cent in those with tuberculosis. Occasional collections, as those from South Africa with a large colored population, show a much higher rate. Antemortem recognition is still the exception as judged by the reports from numerous hospitals.

To our surprise, the Glen Lake autopsy records of 1,292 tuberculosis patients show tuberculosis of the pericardium in only nineteen, that is, 1.5 per cent as compared with 4 to 6 per cent elsewhere. Our proved clinical cases make a total of twenty-two in a patient population of 8,578, or .25 per cent. The fact that Minnesota as a state has one of the lowest rates of morbidity and mortality for tuberculosis may account for the infrequency of this very serious complication. Doctors Charlotte Van Winkle and George Higgins have performed the autopsies in almost all cases, thus giving assurance of zeal and accuracy.

Incidence percentages differ in our small group from those reported in the literature in every respect but one, that of mortality, namely 80 to 90 per cent. Thompson considers tuberculous pericarditis to be a disease of the elderly from forty-nine to eighty-four years of age with an average of sixty-nine. Keefer[5] and also Blalock and Levy[2] find it predominantly in those past forty. In the Glen Lake group over half of the patients are between twenty and forty.

As to sex, Blalock and Levy[2], and Whitehill[3] found males in the great majority (85 and 86 per cent, respectively), whereas our cases are almost equally divided between males and females.

The clinical and pathological features of the disease have been described in detail in many published case reports. In sixteen cases in our series, the diagnosis was made at autopsy only, although in three, electrocardiograms were taken, presumably because of a suspicion of heart involvement. Ten showed dense fibrous adhesions or obliteration of the pericardial sac, indicating old healed or healing lesions. Hypertension with hypertrophy of the left ventricle occurred in one of these. Four had fresh fibrinous adhesions or minute fresh tubercles denoting an acute process. Two had a combination of old and recent pericardial involvement.

Only six cases were diagnosed clinically, all with pericardial effusion. Tubercle bacilli in the fluid or guinea pig inoculation gave positive proof. Three of the six patients died of progressive tuberculosis of the lungs. The other three with tuberculous pericarditis as the major cause of illness will be reported in more detail. They recovered from the acute pericardial disease, but one died of portal cirrhosis some months later. Summaries of the three recovered cases are reported.

A. K., a housewife, aged thirty-six, was admitted April 17, 1939. Her illness began late in January, 1939, with dyspnea, malaise, and weakness. During the past ten years, she had suffered four distinct attacks of painless jaundice associated with nausea lasting from one week to three months. Her pericardial effusion was aspirated and by guinea pig, proved to be tuberculous. The effusion was treated by open drainage with catheter. The lungs were negative for tuberculosis. After her acute pericardial disease had subsided, she was sent to the sanatorium for further treatment and because genitourinary tuberculosis was suspected. Tubercle bacilli were not found in the urine, and cystoscopy and pyelograms were negative. After five months, when she was improved and about to be discharged, she developed jaundice with a palpable spleen and liver. Signs of pneu-

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monia appeared and she died on October 18, 1939. Autopsy revealed the cause of death to be portal cirrhosis and bronchopneumonia. The pericardial sac was obliterated by dense fibrous adhesions.

C. B. was admitted on February 16, 1935, at the age of thirty-six years. He had been a patient at the State Sanatorium from September, 1932 to April, 1934, with tuberculosis, moderately advanced. In November of 1934, an enlarged gland in the cervical region was found to be tuberculous. X-ray plates showed tuberculosis, moderately advanced with a spread. On admission to the Glen Lake Sanatorium, he had malaise, fever, and cough. The sputum was negative for tubercle bacilli. Bed rest and routine sanatorium care resulted in arrest of the pulmonary process and discharge on December 4, 1935.

He was readmitted November 7, 1936, complaining of malaise, slight cough, anorexia, and dyspnea on exertion. His temperature suddenly rose to 104 degrees. A clinical diagnosis of tuberculous pericarditis was confirmed by x-ray. The heart sounds were distant and a friction rub was present. Guinea pigs injected with the pericardial fluid died of miliary tuberculosis. The lung lesion was considered to be inactive. He gradually improved on routine care, was discharged as quiescent after six months (May 23, 1937) and has remained well and able to work for the past eight years.

R. L., a housewife, aged thirty-five, was well up to January 10, 1943, at which time she noticed edema of the ankles; and on February 25, 1943, she had chills, fever, extreme weakness, dyspnea and pain in the left chest. Pericardial effusion was found and aspirated. Tubercle bacilli were isolated from the aspirated fluid. The lungs were negative for tuberculosis on x-ray examination. On bed rest, the effusion gradually began to disappear and the symptoms subsided. In November of 1943, peritonitis appeared; in December of 1943, right pleural effusion; and February of 1945, left pleural effusion. Gradual improvement of these complications took place. She is now clinically well and will be discharged in December of 1945.

Conclusions

1. Only twenty-two cases of proved tuberculous pericarditis occurred in 1,292 autopsies and in 8,578 patients (1.5 per cent of autopsies and .25 per cent of patients).

2. Sixteen cases were diagnosed at autopsy without clinical recognition. Six cases were diagnosed clinically. Three died of the disease.

3. Tuberculosis of the pericardium is, at Glen Lake Sanatorium, a rare complication of tuberculosis with a grave prognosis.

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SEROLOGIC TESTS FOR SYPHILIS

The Frequency of Positive Serologic Tests for Syphilis in Relation to Occupation and Marital Status Among Men of Draft Age. Lida J. Upsilon, Paul T. Bruyere and Martha C. Bruyere. Journal of Venereal Disease Information, Washington, 26:216-222, (Oct) 1945.

An analysis based on information concerning occupation and marital status for a random sample of men examined for Selective Service showed that the prevalence of syphilis varies widely among different occupational groups. It also showed that in any occupation group the prevalence of syphilis is substantially higher among single white men than among married white men but the differences between single and married groups among nonwhites was small.

The analysis was based on the results of serologic tests for syphilis performed on 531,236 Selective Service registrants who constituted a 20 per cent sample of the men examined from January 1 through May 31, 1945. Blood tests were tabulated according to age, race, marital status, and eleven broad occupational groups.

The prevalence of syphilis among single white men ranged from one or two per thousand for seventeen-year-old men in each occupational group to approximately thirty per thousand for the thirty-seven-year-old men in the professional group, fifty per thousand for proprietors, forty-five per thousand for clerical, forty-five per thousand for salesmen, eighty per thousand for craftsmen, eighty per thousand for operatives, eighty-five per thousand for service workers, and ninety per thousand for laborers.

The prevalence rates for married white men were 25 to 50 per cent lower than for single white men in corresponding occupational groups. In general among the white men, the differences between the syphilis rates of single and married men were much greater than were the differences between occupational groups, and these differences were least in those occupational groups having the highest syphilis rates.

Among Negro men a tendency for higher prevalence rates among the less skilled occupational groups was apparent but not statistically significant, and no statistically significant difference between married or single groups could be demonstrated.

The rates for the several occupational groups of Negro men ranged from about twenty per thousand among seventeen-year-old single Negroes in the more highly skilled occupational groups to more than 300 per thousand among thirty-seven-year-old Negro men in unskilled groups.

Prevalence rates for students were lower than for other groups on the whole. Rates for men other than married or single were compared, as a group, and the comparison showed that white men in this group had significantly higher rates than either the single or the married men in corresponding age groups.

THE ACCELERATION OF BONE PRODUCTION BY USE OF GROUND BONE

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THIS study was occasioned by observation of the long healing period required for massive bone grafts and of the need for devising means to accelerate this process. The renewal of a removal strut or framework of quiescent, passive bone is well characterized by the term "creeping substitution."

It has long been thought that if bone were reduced by grinding to bone dust and suspended in blood or plasma[2] to the consistency of a paste revascularization and other simultaneous dependent processes should be facilitated and result in real saving of time in production of bony union.

As the first step in trying this conception a grinding device was contrived. Segments of long bone in experimental animals were removed and replaced with bone chips in one extremity and as ground bone paste in the other. The only variable was the size of bone mass or particles. Bone production for each procedure was followed by x-ray and in the gross after sacrifice of animals.

In a series of rabbits the periosteum over the fibulae was incised and reflected, and the total fibulae removed under ether anesthesia. Within the periosteal sheaths of the left fibulae in all the rabbits ground bone paste was inserted. Adjacent muscle and fascia were loosely approximated and the skin edges united with fine silk suture. The right fibulae in half of series were replaced by 1/16 inch to 1/8 inch segments of bone. The right fibulae were discarded in the other half of the series. Closures were made similar to those on the left.

The optimum time for comparison of bone production following these procedures was found to be three weeks. After this time had elapsed the rabbits were killed and the extremities were x-rayed and examined in the gross.

Representative films (Figs. 1, 2, and 3) show bone production three weeks following splitting of the periosteum and replacement with ground bone paste (*left* in each figure) and with bone chips in (Fig. 1, *right*) and regeneration from periosteum alone (Fig. 2 and 3, *right*). The structure of the sectioned fibulae is still apparent, indicating incomplete substitution by new bone. Production of bone from a paste of ground-up fibulae was from two to three times that present in the right fibulae.

The weight of fibulae averaged 0.4 grams for regrowth from ground bone, 0.27 grams from bone segments, and 0.19 grams from periosteal bone production *per se*.

It is believed that this study has important applications in the care of fractures, in other orthopedic situations and in plastic surgery. This concept represents no radical departure from accepted practices since bone dust from the sawing of bone has long been conserved and used. The obtaining and converting of rongeured bone chips to bone dust in paste suspension is technically simple and rapid. There is less manual handling of bone; consequently it is easier to maintain asepsis. The bone paste can be delivered into a syringe and accurately applied by touch or under fluoroscopic guidance. Operative time is reduced since the bone does not have to be shaped and chips tediously placed.

An advantage inherent in the use of this medium is the economy in donor bone needed. On test a given volume of bone produces three to five times its volume as powder and six to twelve times the original volume when suspended in fluid, the ratio being dependent on the proportions of cortex and cancellous bone, fineness of grind and density of suspension. Thus the bone volume taken is only a fraction of that required for chip fill-in or shaped grafts (true even if the donor defect is also filled in with suspension).

Clinical applications suggested by this study includes the following:

1. Filling in defects in length and cross section of bones. The cavity formed by excision of scar tissue can be filled in with bone suspension to supplement bone formation from an onlay graft or the bone suspension may be used alone with plate retention.

2. Filling in defects of skull, nasal, malar, and other bones by open surgery, by injection through a needle for lesser depressions, or by precast shapes[3] using ground bone or cartilage.

3. Accelerating repair when delayed union or non-union may be anticipated due to interposition,

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distraction, or fractional contact of bone ends. Needling and puddling may be effective in forcing aside or impregnating with multiple tracts of suspension the interposed tissues or gaps in contact.

Present emphasis in orthopedic practice is on the use of thin strips of cancellous bone obtained from the ilium as a filler for orthopedic defects.[1] Use of ground bone suspension has a like merit and additional distinct applications. The cancellous element of a rib is similar to that of the ilium in its bone producing quality, is easier to obtain and its cortical element provides in ground-up state diffuse, minute, local depots of the components with which osteoblasts lay down bone. Vascular exchanges make these quickly available by way of a rapidly established vascular bed.

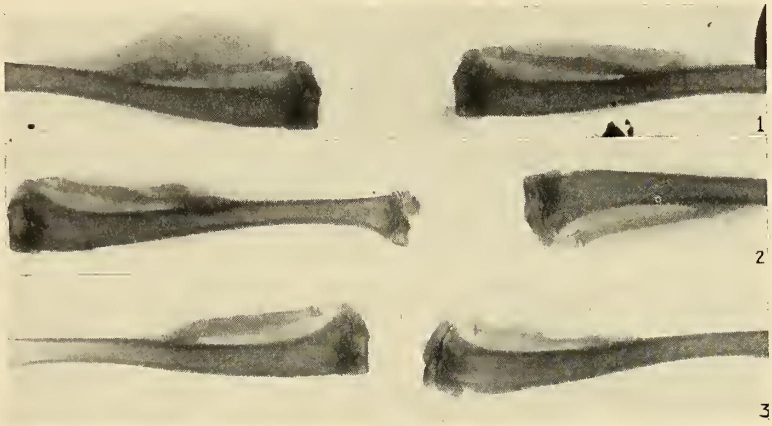

Fig. 1. X-ray three weeks after removal of fibula and replacement with ground bone paste *(left)* and bone chips or segments *(right)*.

Fig. 2. X-ray of extremity of another rabbit three weeks after removal of fibula and replacement with ground bone paste *(left)* and regeneration from periosteum alone *(right)*.

Fig. 3. X-ray in third rabbit three weeks after replacement with ground bone paste *(left)* and regeneration from periosteum alone *(right)*.

Summary

Comparable defects were produced in left and right fibulae of rabbits, filled in with bone chips on one side and ground bone suspension on the other. Bone production from ground bone was found to be much more rapid than that from bone chips. This acceleration is due to ease of vascularization of a suspension. Conversely, a solid mass of bone offers time-using resistance to vascular invasion. Clinical applications are believed to be many and time saving.

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THE FOOTPATH TO PEACE

To be glad of life, because it gives you the chance to love and to work and to play and to look up at the stars; to be satisfied with your possessions, but not contented with yourself until you have made the best of them; to despise nothing in the world except falsehood and meanness, and to fear nothing except cowardice; to be governed by your admirations rather than by your disgusts; to covet nothing that is your neighbor's except his kindness of heart and gentleness of manner; to think seldom of your enemies, often of your friends and every day of Christ; and to spend as much time as you can with body and spirit, in God's out-of-doors—these are little guideposts on the footpath of peace.—HENRY VAN DYKE.

GALLSTONE ILEUS

Report of Case

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WHILE the treatment of gallstone ileus is surgical the diagnosis is just as much a problem for the internist as the surgeon.

A gallstone to produce intestinal obstruction must be large, probably 2.5 cm. in diameter or larger, and must erode its way into the small intestine. Because of the proximity of the duodenum to the gall bladder this is the usual site of the perforation although sometimes the fistulous track enters the jejunum, stomach or colon. A stone, free in the peritoneal cavity, may make its way into any part of the intestinal tract or even into the urinary bladder. It usually obstructs in the lower ileum where the lumen is narrower.

Bartholin in 1654 is credited with having first described a case of gallstone ileus. Courvoisier in 1890 reported on 131 cases and Von Wagner in 1914 on 334 cases which had appeared in the literature. Many isolated cases have been reported in the past twenty years but of the few articles which have appeared recently I have found the one by Rigler, Borman and Noble published in the November 22, 1941, *Journal of the American Medical Association* the most valuable. According to Hinchey, his case is the only one reported in which a second obstructing stone was removed during convalescence from the operative removal of the first one.

Gallstone ileus appears in the later decades, several times as often in women, 75 per cent of all cases being present in women over sixty.

The symptoms are those of intestinal obstruction with vomiting and colic which may be periodic. Some individuals have a history of gallstones, some of periodic digestive disturbance and some give a history of no digestive trouble until obstruction occurs. With high obstruction there is no distension.

The condition has to be differentiated from other types of mechanical obstruction and from paralytic ileus. A knowledge of previous gallstone attacks or x-ray evidence of the presence of gallstones is of value. In paralytic ileus gaseous distension is more marked and colic may be absent. Obstruction due to gallstone ileus does not respond to duodenal drainage any better than strangulation of the intestine associated with intussusception, volvulus, mesenteric thrombosis or obstruction due to new growths. Failure to deflate in any obstruction is an indication for immediate operation. As there is little or no distension in gallstone ileus there is a temptation to employ nasal suction too long. The leukocyte count and pulse are of little value in this condition whereas both tend to rise in obstruction due to strangulation.

X-ray is the most valuable aid in diagnosis. According to Rigler et al. only seven cases had been reported diagnosed by x-rays before 1935. From 1935 to 1940 twenty-four cases had been so diagnosed. In four of Rigler's fourteen cases the stone was visualized by x-ray. However in thirteen of his fourteen cases there was x-ray evidence indicating gallstone ileus. A most valuable x-ray sign is evidence of gas or if barium is used of gas and barium in the bile ducts. This is better demonstrated by a film of the upper right abdominal quadrant than with the tube focused over the mid-abdomen and is almost pathognomonic of a fistula from the duodenum into the gall bladder.

Treatment is, of course, surgical with preliminary deflation by duodenal tube and correction of dechlorination. Duodenal drainage should not be persisted in as the longer the drainage the higher the operative mortality. The mortality is at present about 50 per cent.

Report of Case

Mrs. E. G. S., a widow, aged seventy-five, was first seen February 4, 1942. She complained of right abdominal pain which had been present off and on all day followed by nausea and vomiting. On further questioning she admitted she had had the same pain off and on for four years but never had had any associated vomiting.

She stated she had had a stone removed from the left kidney twenty-five years before and had known she had high blood pressure for eighteen years.

On examination her blood pressure was 260/140, pulse 80, temperature 98.6. The abdomen was soft, borborygmi were present but there was no distention nor tenderness in the region of the appendix or gall bladder. The vomitus was grumous in character suggesting coffee grounds.

On admittance to the hospital the next day (February 5), physical examination was essentially the same, vomiting continued but the blood pressure was only 140/72. Over a pint of bile-colored fluid was drained from the stomach with relief. This material contained free HCl 17, combined acid 77, and occult blood. The leukocyte count was 8,000.

Nasal suction was instituted and intravenous glucose administered. A flatplate taken the day after admission (February 6) showed some gas in the stomach and colon but none in the small intestine and no gallstone.

The symptoms of obstruction persisting, a small amount of barium was given the fifth day after admission (February 11) and the x-ray showed a deformed duodenal cap and a non-opaque shadow about 4 cm. in diameter to the left of the spine and behind the stomach. No barium had progressed beyond the obstructing mass which was apparently in the distal duodenum. A tentative diagnosis of gallstone ileus was made.

The following day (February 12) a laparotomy was performed by Dr. J. F. Hammond. The gall-bladder region was occupied by adhesions and an inflammatory mass which extended to the region of the tail of the pancreas, suggesting an associated malignancy. Because of the inaccessibility of the mass back of the stomach a gastro-enterostomy was performed to relieve the obstruction.

After a stormy postoperative period of two weeks colicky epigastric pain, nausea and vomiting returned (February 27). A few days later (March 2), x-ray examination showed a functioning gastro-enterostomy, barium outlining the duodenum, gall bladder, common and hepatic ducts. There was no definite shadow of a gallstone but obstruction about six inches beyond the gastro-enterostomy site was almost complete.

The following day (March 3), a gallstone 2.5x2.5x3 cm. with a faceted surface was removed from the upper jejunum.

Convalescence from the second operation was stormy. A fistula developed and the drainage was copious for two or three weeks. The nature of the drainage fluids interfered with the healing and nutrition of the patient. She developed some indication of vitamin deficiency, a very red tongue, being present. Daily intramuscular injections of thiamine chloride and cevitamic acid were given for eight days and recovery followed with a slight fistula persisting.

The patient left the hospital, April 3, after two months in the hospital and later visited her daughter in Oskaloosa, Iowa. Her physician there was informed of her illness and the fact that the removed gallstone had a faceted surface and that she doubtless had or had had another stone.

On April 30 the patient had another attack of acute abdominal pain associated with nausea and persisting vomiting. X-ray showed an obstruction in the upper small intestine and on operation a second gallstone about the same size and at the same location as the previous one was removed. Convalescence was uneventful.

It is rather remarkable that this patient did not know previously that she had any gall-bladder disease. Her symptoms had apparently not been severe enough nor incapacitating enough to require x-ray investigation. Even during the period that the first gallstone was making its way into the duodenum she was not incapacitated. In spite of a high blood pressure for the past eighteen years and advanced years she went through three abdominal operations inside of three months without any circulatory difficulty.

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PREPARATIONS EXEMPT FROM COUNCIL CONSIDERATION

The following official preparations have been declared exempt from Council consideration for inclusion in New and Nonofficial Remedies, as their actions, uses and nature are sufficiently well understood by physicians not to require such inclusion.

This list has been adopted for publication so that it may be brought to the attention of all manufacturers and other interested groups. From time to time there may be added other drugs, the names of which will also be published.

Iron and Ammonium Citrates
Ferrous Sulfate
Calcium Gluconate
Antimeningococcic Serum
Liver and Stomach Preparations included in U.S.P.
Digitalis Preparations included in U.S.P.
Acetylsalicylic Acid
Caffeine with Sodium Benzoate
Carbon Dioxide
Oxygen
Oxygen-Carbon Dioxide Mixtures
Chlorinated Paraffin (Chlorocosane)
Cinchophen
Neocinchophen
Dextrose Solution
Sodium Chloride Solution
Isotonic Solution of Three Chlorides
Sodium Citrate
Sodium Biphosphate
Magnesium Sulfate
Trioxymethylene (Paraformaldehyde-U.S.P. X.)
Methylene Blue
Quinine and Urea Hydrochloride
Salicylic Acid
Sodium Salicylate
Natural Oil of Sweet Birch (Methyl Salicylate)
Pentobarbital Sodium
Papaverine Hydrochloride
Emetine Hydrochloride
Totaquine
Tribasic Calcium Phosphate
Magnesium Trisilicate
Tribasic Magnesium Phosphate
Ichthammol Preparations
Strophanthin

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MALIGNANT TUMORS OF THE KIDNEY

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THE dictum that cancer is curable in its early stages may be difficult to demonstrate to our public if we try to prove it by our kidney-tumor cases. Even the most common symptom of kidney tumor, hematuria, which is the one that most often causes the patient to seek the physician's opinion, is frequently a manifestation of an advanced lesion. Hematuria must always be regarded with suspicion by the attending physician and should never be dismissed lightly. A normal urine may be present and the patient be the possessor of a malignant kidney. Howes observed that the prognosis in all renal cortical tumors is bad, since the growth may remain symptomless for an initial period and remote metastases may occur early.

Patients with prostate disease show hematuria frequently as one of their symptoms. This blood may not arise from the prostate however and these patients should be checked by excretory urograms for the possible presence of an associated kidney tumor. No tell-tale symptom aside from hematuria is yet available to us to arouse our suspicions of kidney tumor.

We are thus at a stage where late diagnosis, which is most often the case, necessitates radical surgery in an effort to cure our patient. In most cases we fail to cure because all tumor tissue is not removed. Even though the surgical mortality is low, the survival rate in terms of a three- to five-year period is low also.

This contribution is a review of thirty-two cases of malignant tumors of the kidney treated in St. Mary's and St. Luke's hospitals in Duluth in an effort to find, if possible, any encouraging factors in diagnosis or treatment. A tabulation of cases from the hospital records was made and the current literature on this subject was drawn upon. Most of the patients in this series died within two years after the onset of their symptoms.

Of the whole group only seven were alive at the time of this writing (March, 1945), one of whom was operated upon only one year ago. One patient survived five years, one patient four years, one patient three years, and three patients two years. All these patients were older than thirty-seven years. They all received nephrectomies. There was only one classified as of papillary type and the other six were adenocarcinomas.

Howes, in 1944, observed that in a series of fifty-four patients of this type only five survived over three and one-half years without evidence of metastases.

We are indebted to the roentgenologist for the helpful diagnostic evidence leading to incrimination of these malignant kidneys. In the light of our present knowledge the x-ray will have to be our guiding star if we can bring it into use earlier in the patient's illness. Loss of weight doesn't help us. One patient only in this survival group showed any loss of weight. Likewise a palpable mass was seldom helpful for in only one case of the seven was a palpable mass recorded. Pain was a feature in five cases but it was absent in two. The pain was located usually in the back or in the loin. One patient had pain in the right lower quadrant—a dull heavy ache. This pain however had been a complaint for three years preceding operation and hematuria was noticed during the same period of time; yet medical attention was unsought. In these seven cases one patient had hematuria two years, one had it six months, and two had it five months, one three months and one just a few days. Two patients had dysuria, however, and two had frequency of urination.

Turning to the twenty-five patients listed as "died," it was found that in four the history extended back several years as far as sixteen years in a case of papillary carcinoma, ten years in two cases, four years in one case and three years in two cases. This was precious time lost to these patients. Usually the patient is to blame for such delay because of lack of appreciation of the seriousness of his symptoms and also because, in the case of hematuria, the symptom is so many times painless. If pain were the dominant early symptom, patients would come to the physician earlier. When pain was mentioned in this group it occurred in the back or in the flank fourteen times. It occurred in the abdomen five times. There was no pain recorded in six cases. Pain occurs late in the course of the illness as a rule unless calculi are associated with the neoplasm.

One patient gave a "kidney stone" history extending ten years back and his symptoms were

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referred to the left. At autopsy he had a primary carcinoma of the left kidney and multiple remote metastases but there were no stones found.

A discussion of the roentgen diagnosis is important in these cases. Of the total group consisting of thirty-two cases, eight for sundry reasons were not referred for x-ray examination. Of the remaining twenty-four, thirteen had a positive x-ray diagnosis of kidney tumor. Eight more were regarded by the roentgenologist as "suggestive," which calls for a careful follow-up. Of the remaining three, one had a negative x-ray report and two were diagnosed as hydronephrosis. Obviously the last two required close scrutiny and follow-up also. This gives a high average of diagnostic assistance. Should the excretory urogram fail to reveal convincing facts, a retrograde urogram should be utilized. Melicow made the observation that a retrograde urogram is almost always conclusive in the diagnosis.

Le Conte discussed the antecedents of these kidney tumors and observed that pathologists occasionally find small cortical neoplasms which might exist perhaps for long periods as latent, silent or benign tumors. He mentioned the findings of Kozall and Kirshbaum who reported seventy-seven cases at autopsy, thirty-two of which showed small well encapsulated hypernephroid adenomata in the kidneys. The remaining forty-four were larger and termed hypernephroid carcinoma and some of these were associated with remote metastases.

Unfortunately we are at the present time devoid of diagnostic possibilities to reveal such neoplasms so early in the course of the disease.

Wilms tumor is the usual malignant tumor of the kidney found in children under seven years of age. However, in this series it is of interest that there was one case of Wilms tumor of the right kidney in a man aged sixty. This patient was admitted to the hospital for tonsillectomy in April of 1941. At that time no general examination was recorded. In May of 1943 he was admitted with swelling of the left leg and pain in the region of the left hip. Added to these complaints he had intense itching at various spots such as palms and soles, flexor surface of elbows and forearms which would be followed by localized swellings sometimes as large as hen's eggs. These swellings would last two or three days and then disappear. The urine was normal, hemoglobin 13.25 gms. (93 per cent), white blood cells, 8,850 and 10,950, polymorphonuclears 64 per cent, lymphocytes 31 per cent and monocytes 3 per cent. A biopsy of a neck gland was reported "inflammation of a lymphnode (mild)." X-ray revealed hypertrophic changes in the lumbar spine. Skin test using a drop of histamine intracutaneously provoked a large welt one inch in diameter within ten minutes. This disappeared in forty-eight hours. The patient left the hospital after eight days of observation with a tentative diagnosis of sarcoma, carcinoma or Hodgkin's disease and a palpable tumor in the left lower quadrant. A flat plate of the kidneys and bladder was said to be negative on this admission.

His next hospital admission was in June, 1943. The complaint was still of left leg pain and swelling and an increase in the size of a mass in the left groin. Some relief of his symptoms followed x-ray therapy and he left the hospital in five days.

He was hospitalized in August, 1943. This time a urologic examination revealed a bloody fluid coming from the right ureteral orifice. The catheter on the left side passed easily into the ureter but on the right the catheter would advance but a few centimeters. Bilateral retrograde urograms showed a marked filling defect in the right kidney. A probable tumor of the right kidney was diagnosed by Dr. Abrahams, the roentgenologist. At operation this right kidney was removed and the pathologist, Dr. Arthur Wells, recorded his findings as a Wilms tumor. To quote Dr. Wells "This tumor has the predominating elements of a fibro-sarcoma and in only one section did I find any carcinomatous elements. It should be noted that the tumor cells must certainly have been in a benign form as embryonal rests all of this patient's life. Dr. E. T. Bell (University of Minnesota) feels that this is a Wilms tumor." Herman states that such tumors in the adult are pathological curiosities.

There was one child of nine years who had a tumor of the right kidney which was diagnosed pre-operatively. Nephrectomy was done and at the time of operation it was noted that the renal vein was involved by tumor tissue as far as the vena cava. The autopsy report in this case disclosed embryonal adenocarcinoma with metastatic involvement of the liver, lungs, heart and adrenal.

One child, aged three, in this series, showed at operation a horseshoe kidney which was very low in the pelvis. On examination by the pathologist this kidney showed embryonal adenosarcoma.

A still younger child, aged two, was found to have a tumor of the left kidney, and this was determined in the laboratory to be an adenosarcoma.

Treatment is surgical in the adult cases, the majority of which will be adenosarcomas. In children, where Wilms tumors are usually found, radiation is the treatment of choice. According to Bixler, Stenstrom and Creevy, there are few, if any, five-year survivals in children with Wilms tumor. Where operation is contemplated for malignant kidney, in an adult, pre-operative radiation is advised by these authors on the basis that it stops the growth of the tumor cells themselves. On inoperable cases, life may be prolonged by radiation, and where metastases are present and accompanied by pain, radiation gives relief from pain.

Kerr and Stephens studied thirty-seven adult cases with respect to radiation. Some received radiation preceding surgery, some post operatively and some received no treatment other than radiation. One patient had been followed about ten years; twelve were living at five years. Eight of the twelve patients received radiation pre-operatively. These two men are of the opinion that pre-operative radiation decreases bleeding at the operating table.

Summary and Conclusions

A study of the histories of thirty-two cases of malignancy of the kidney with nephrectomy reveals many instances in which long periods of time had been allowed to elapse between onset of the symptoms and treatment. Inasmuch as hematuria seems to be the dominant danger signal this should be broadly stressed in public cancer-campaign literature. Patients with blood in the urine should know of the danger of delay and report it to the physician. The physician should proceed at once to identify the source of the bleeding. Even if this could be done in one hundred per cent of the cases there would still remain many late diagnoses. Roentgen examination and urologic investigation constitute our most reliable diagnostic regimen at the present time. We are in great need of measures to promote earlier diagnosis. Radiation seems advisable preceding as well as following operation. Follow-ups in the cases reported revealed that only one patient had survived five years postoperatively. A rare case of Wilms tumor in an adult is included in this report.

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MATERIAL URGE VERSUS MATERNAL URGE

Not so many years ago, a childless woman was looked down on and pitied by her husband, her friends and neighbors. Then as time passed, the pendulum swung to the opposite extreme. This complete change of attitude is illustrated by the remark made by a woman reporter who came to our office at the Maternity Center Association just before the war. Said she: "My editor sent me for a story about maternity, but I can't see for the life of me why people want to have children today. Only morons are having babies."

Then the war came. A baby suddenly became important to millions of young people who hadn't thought much about having children up to that moment. Husbands and wives wanted a living symbol of their love even though they were separated by the oceans of half the globe. They wanted a tie to tomorrow—something of themselves, the value of which was not figured in cash. The birth rate skyrocketed. It was fashionable again to have babies.

Now the war is over. The impelling wartime reasons for having babies have vanished, and things that cash can buy become important again. People are settling down again to the habits of peacetime living and thinking of those shiny new cars, radios, television sets, refrigerators and the countless other expensive gadgets that have been promised us in our postwar society.

Will a baby continue to be a living symbol of the love of husband and wife for each other, or will a baby become an expensive little nuisance who keeps mother and father from buying that new television set? What is the new attitude going to be about babies? That remains to be seen. We will have to wait and see what the majority of the GIs want when they get home; what the new generation of young people, who were not old enough to go to war, will want when they get married.

That attitude will be set in our next generation of parents by what they have learned about the relationship of babies to their own married happiness. One favorable fact is that young people of this generation have not been content with the stork legend, or the doctor's bag. They have wanted to know the facts—and even if those facts were not provided in their school and college courses, at home or at church—they had the initiative to find out what they could, to put pressure on their teachers and their parents. If they succeed in arriving at a sound attitude about babies and family living, the credit is theirs and theirs alone for theirs is the generation which is causing a breakdown in the centuries old taboos and euphemisms.—*Maternity Briefs,* February, 1946.

CLINICAL-PATHOLOGICAL CONFERENCE

DIPHTHERIA: A REPORT OF SIX DEATHS

HAROLD H. JOFFE, M.D., and ARTHUR H. WELLS, M.D.

Dr A. H. Wells: The several fundamental lessons to be gain by a careful analysis of the following six deaths from diphtheria are mainly the result of many years of inexperience with the vicious nature of this disease. We wish to present a brief clinical and necropsy review of each case with a discussion of this group and a review of some salient features of the general subject of diphtheria.

Case Reports

Case 1.—This fifty-one-year-old white lumberjack was admitted to the hospital thirty-four hours before his death. He complained of a marked difficulty in swallowing and hoarseness, which had come on gradually during the past three days. At the time of admission, he was not even able to swallow water. There was also some difficulty with inspiration, and he had to breathe entirely through his mouth. His temperature was 102°F. and he did not feel very ill at any time. Physical examination revealed a thick gray-white membrane which covered the entire pharynx, including the soft palate, the nasal pharynx, laryngeal pharynx and, possibly, the larynx. However, the swelling precluded looking into the larynx. The examination was otherwise essentially negative. A smear from the pharynx revealed numerous Vincent's angina organisms and rare diphtheroid bacilli. Cultures on Loeffler's media were reported eighteen hours after admission, as containing morphologically and tinctorially typical diphtheria bacilli. These were later proved virulent by guinea pig tests. About thirty hours after being seen by the physician in his office and ten hours after the bacteriological recognition of the disease, the patient was given 30,000 units of diphtheria antitoxin. During his period in the hospital he was constantly cyanotic, more than would be accounted for by the apparent respiratory difficulty present. He managed to phonate some, and he was constantly coughing up a great deal of muco-purulent matter. The cyanosis was thought to be due to sulfadiazine therapy. During his last four hours he became quite cyanotic and his respirations were labored. His pulse reached 112, and respirations 46, during this period. After his death, morphologically typical diphtheria bacilli were found in the original throat smear.

The necropsy reveals an extensive swelling and thick diphtheritic membrane covering the entire larynx (Fig. 1) with almost complete obstruction of the air passage in the larynx, most severe at the vocal cords. There were mild gross and histologic evidences of toxic changes in the myocardium, liver, spleen and kidneys. Otherwise, the examination was essentially negative. It was concluded that the death was due to asphyxia.

Case 2.—This forty-year-old warehouse worker was first seen in his physician's office fifty-two hours before his death. At that time there was a thick, loosely attached membrane over the oral pharynx and tonsils. Soft tissues in the area of the membrane were swollen, leading to the clinical diagnosis of quinsy. An attempt to release pus from the swollen area by the insertion of forceps was made. There was also some swelling below the angles of the jaw on the same (left) side of the neck. About ten hours before death he was admitted to the hospital coughing bloody sputum and suffering from severe pain in his throat and some pain in the chest. Two hours later a culture was taken from the throat. Besides the areas described, the uvula and soft palate were also covered by a thick grayish membrane which bled easily. There were many coarse râles in both lungs. He was given penicillin and morphine. One half hour before death his color was considered good, but his pulse was weak. Fifteen minutes before death, he became severely cyanotic, his respirations were quiet and regular, and his pulse was very weak. Diphtheria antitoxin was withheld pending a report on cultures from the pharynx.

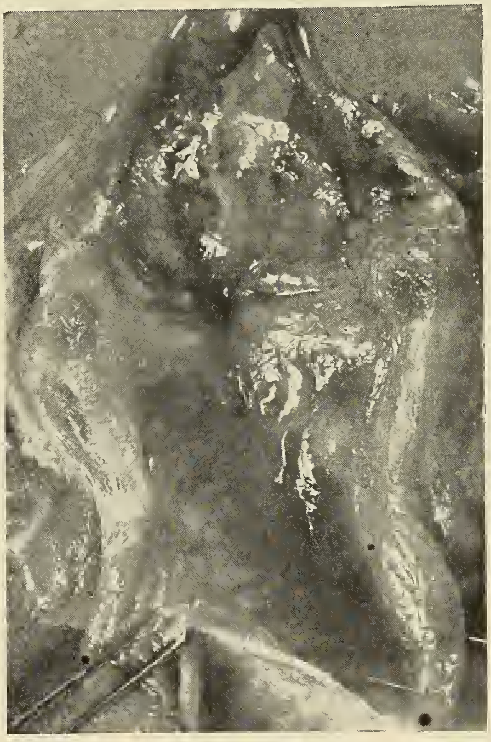

Fig. 1. Opened larynx with severe injection, swelling and diphtheritic membrane, the latter lifted by forcepts.

The necrosy revealed an extensive diphtheritic membrane extending down from the pharynx through the larynx, trachea, and major bronchi and, in places, into the smaller bronchi. The membrane and swelling in the larynx had caused almost a complete closure of the air passages, while the membrane and swelling in the smaller bronchi undoubtedly greatly hampered the exchange of air in the lungs. Death was due to asphyxia. Toxic changes in the myocardium, liver, spleen and kidneys were relatively mild.

Case 3.—A seven-year-old boy was first admitted to the hospital forty days before his death. He became sick seven days before admission, with general malaise, anorexia, and feverishness, associated with a sore throat and later a swelling in the lateral aspects of the neck. There was continuous fever and some coughing. A great deal of swelling of the tonsils, a marked fetor oris and whitish-gray adherent membrane over the oral pharynx, soft palate, and uvula, were noted. The child was considered very "toxic." There was a bloody

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drainage from the nose and some difficulty in swallowing. His temperature was 101°F., pulse 95, and respirations 22 per minute. He was given 60,000 units of diphtheria antitoxin immediately, along with supportive measures and penicillin. His white blood count was 17,300, hemoglobin 15 grams, and the differential count was essentially normal. There was 3 plus albumin in the urine. Throat cultures revealed diphtheria bacilli and for several days his general condition improved and he was finally discharged a month after entrance into the hospital, with some remaining difficulty in swallowing, partial palatine paralysis, nasal twang to his voice and some regurgitation of fluids through his nose. He was again admitted five days before his death, very dehydrated, acutely ill, having difficulty in swallowing and difficulty in breathing. His temperature was 101.6° F., respirations 24, and pulse 120 per minute. There was no voluntary movement of the uvula. Phonation was difficult. Some questionable dullness in the right lower lobe area of the lung and coarse râles throughout the lungs were found. His white blood cell count was 8,400 with 78 per cent neutrophiles; his hemoglobin was 12.5 grams; there was 2 plus albumin in his urine. An x-ray of the lungs led to the conclusion of pneumonia with associated atelectasis in the medial portion of the right lung. Although his temperature gradually returned to normal, his pulse remained high. He was given oxygen for his cyanosis. His condition improved considerably, so that he could breathe freely and get along without oxygen until, suddenly, one-half hour before his death, his breathing became more labored. There was increase in cyanosis without apparent obstruction to inspiration. Involuntary urination was noted, and he suddenly stopped breathing.

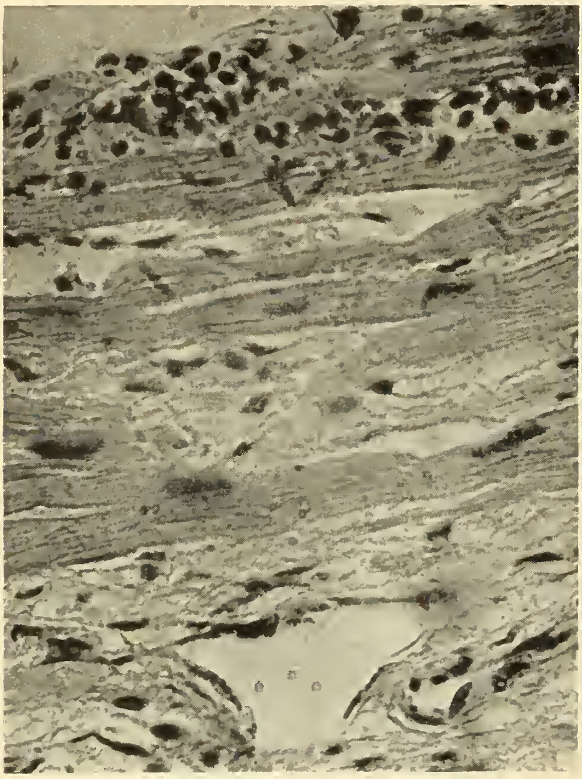

Fig. 2. Myocarditis with focal leukocytic infiltration, toxic degeneration of muscle fibers, swelling and hyperchromatic staining of nuclei and interstitial edema.

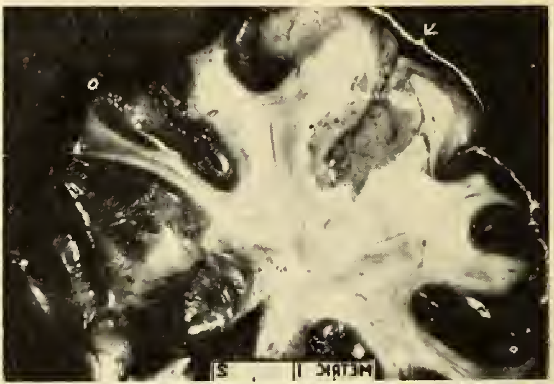

Fig. 3. Focal area of necrosis of cortex.

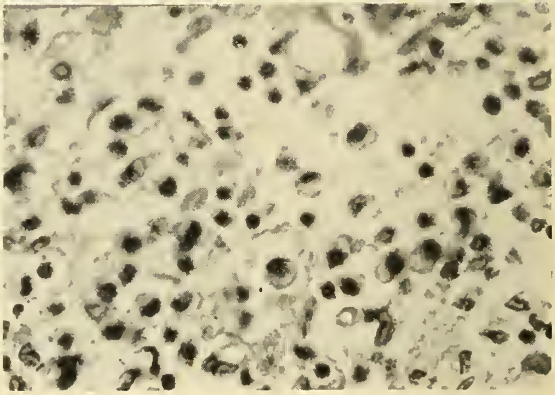

Fig. 4. New capillaries, fibrous connective tissue and many "scavenger" cells.

The necropsy revealed an unusually firm and remarkably pale myocardium which, on microscopic examination, had a diffuse myocarditis characterized by a generalized swelling and edema throughout the interstitial tissue with slight diffuse fibroblastic proliferation. There was also a lymphocytic and monocytic patchy infiltration with occasional neutrophiles, generally located about degenerated cardiac muscle fibers (Fig. 2). There was no Zinker's degeneration. A most remarkable area (3x6 c.m.) of apparent necrosis with extreme pallor (Fig. 3) confined to the cortical tissue just posterior to Broca's area on the left side, was found in the brain. Histologically (Fig. 4), the cortical nerve cells had completely disappeared from the involved region and was replaced by recently formed capillaries, loose connective tissue, many monocytic scavenger cells, and occasional lymphocytes. A third finding was an approximate two-thirds atelectasis of the lungs, associated with a mild, patchy, terminal bronchopneumonia. It was concluded that the patient had died, primarily, because of a combination of his diphtheritic myocarditis and pulmonary atelectasis of undetermined cause. The diphtheria infection itself had long been cured.

Case 4.—This six-year-old girl was admitted to the hospital 18.5 hours before her death with a sore throat and headache of four days' duration. She apparently had been coughing for about two weeks but had not been very ill. Four other children in the same family had sore throats; three were attending school. Her pulse was 150; and respirations 30 per minute; temperature was 101.6°F. She appeared acutely ill, with a flushed face, obviously difficult breathing, nasal congestion and watery discharge from the nostrils. Oral pharynx and tonsils were covered by a thick grayish adherent membrane. There was severe fetor oris. The lateral aspect of the neck and cervical glands were swollen. There were stridulous râles in the lungs, particularly at the right base. She was immediately given 60,000 units of diphtheria antitoxin. Penicillin, sulfadiazine, and supportive measures were used. She had received antidiphtheria immunization by a three-injection method two years previously. Throat cultures revealed diphtheria bacilli. Two hours after admission she was having considerable respiratory difficulty and was quite cyanotic. A tracheotomy resulted in immediate relief. She was very restless and did not sleep more than half an hour during the entire night. Her temperature reached 106°F. There was much exudate coughed through the tracheotomy tube. She was breathing satisfactorily one half hour before her death, and became cyanotic with increasing rapidity of respirations and pulse five minutes before death. Her pulse had gradually risen while in the hospital from 130 to 168 per minute and her temperature from 101.6°F. to 106°F.

The necropsy led to the conclusion that this girl died as a result of "toxemia" mainly through its effect on her heart muscle. However, there was no inflammatory change in the heart. There was considerable swelling and membrane formation in the larynx with rather severe obstruction. No obstruction or membrane formation was found below the tracheotomy opening. There was a mild bronchopneumonia.

Case 5.—This four-year-old boy was admitted to the hospital two hours before his death. The child's father had recently returned from the European theatre of the war. His parents explained that he had had redness and swelling of his ear for five days. During this period he had coughed some and complained of a sore throat. He had not been able to eat or drink, apparently because he could not swallow. A physician had been called but was too busy to make a house call. Another physician visited two days before the child's death and made a diagnosis of mumps prescribing cold packs to the neck. Physical examination revealed an acutely ill child in extremis. He was cyanotic. His temperature was 102.4° F. and pulse 96. There was much wheezing over the trachea and bronchi, labored inspiration, dry, cracked tongue and lips, foul and fetid odor of the breath. Inspiratory effort was pronounced and there was a dirty, grayish, adherent, thick membrane over the tonsils, uvula and pharynx. There was swelling below the angles of the jaw and the lateral aspects of the neck (Fig. 5). There was none in front of the ears in the parotid area. He was given 30,000 units of penicillin intravenously immediately after admission and an hour and fifteen minutes later he received 20,000 units of diphtheria antitoxin intramuscularly. Oxygen therapy and other supportive measures were instituted. His inspiration continued labored and was apparently partially obstructed. His pulse became weak and rapid. He became much weaker. His pupils did not react to light; cyanosis became more marked; respirations more forced; and the pulse was unobtainable, shortly before respirations ceased.

The necropsy revealed only mild diphtheritic involvement of the upper portion of the larynx without interference with its lumen. Various internal organs had moderate toxic changes, seen both grossly and microscopically. Death was considered to be the result of "toxemia," particularly as it affected the myocardium.

Case 6.—This nine-year-old boy, a brother of the child in Case 5, was admitted on the same day with his brother. He died six days later. He had been sick for two and one-half days before admission with a sore throat and headache. There had also been severe malaise, anorexia, dysphagia, nasal discharge, and some apparent respiratory difficulty. His temperature was 100.8°F., pulse 88, and respirations 28 per minute. He was considered severely and acutely ill. There was an incomplete, dirty, purulent membrane over the oral pharynx, uvula and tonsils. His breath was very foul. The lateral aspects of the neck below the angles of the jaw were swollen. He was given 40,000 units of diphtheria antitoxin intravenously immediately along with penicillin and other therapy, the 40,000 units of antitoxin being repeated the following day and again on the third hospital day. He seemed to show gradual improvement during the fourth and fifth hospital days. On the day before death, respiratory obstruction developed, and a tracheotomy was performed. He breathed much easier and cyanosis decreased. He coughed up considerable exudate. He had been given over 6,000 c.c. of parenteral salt solution during five days. The inaccurately measured daily output during this period totalled 1,000 c.c. Blood pressure and blood urea measurements were not performed.

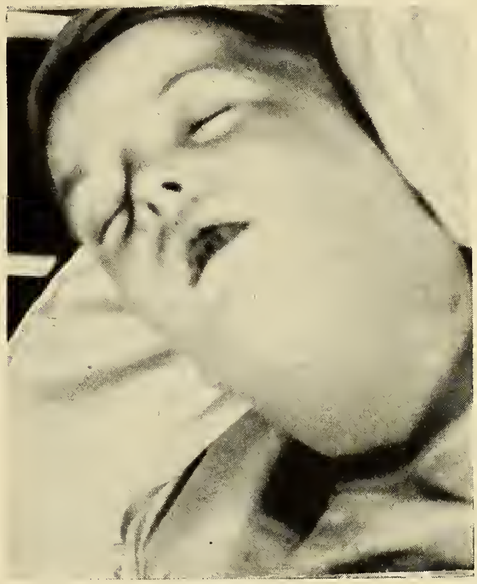

Fig. 5. "Bull neck" due to diphtheria.

The necropsy revealed approximately 75 per cent atelectasis of both lungs and a grade IV pulmonary edema. There was practically no aerated lung tissue remaining. There was, in addition, a moderate edema throughout the subcutaneous tissues and the soft tissues of both thorax and abdomen. The mechanism of death might include poor aeration of the lungs due to (1) respiratory muscle weakness, with resultant severe atelectasis of lungs and (2) excessive sodium chloride intake for this acutely ill child, with resultant pulmonary edema and general anarsarca.

Discussion

Among the more important lessons to be learned in this small group are:

1. Suspect diphtheria with every membranous pharyngitis.

2. Do not let large numbers of Vincent's angina organisms in the direct smear interfere with the careful exclusion of diphtheria bacilli.

3. Treat for diphtheria without waiting for laboratory culture reports if the case looks very suggestive.

4. The patient with diphtheria need not seem very ill, even within a short period before death.

5. The diphtheria patient has a good chance of developing respiratory tract obstruction and must be watched closely for it.

6. This obstruction may exist without the usual sound effects.

7. The measurement of vital capacity may be indicated in certain cyanotic patients.

8. Laryngoscopic examination and aspirations should be used freely.

9. It requires only a few minutes to cause death by asphyxia in diphtheria.

10. In malignant diphtheria, larger dosages of antitoxin are indicated.

11. Precious time may be lost between the time of diagnosis and the institution of therapy.

12. Daily parenteral saline exceeding 700 c.c. in adults and less in children may cause death by pulmonary edema, in these acutely ill patients. Give glucose solutions when parenteral water therapy is indicated.

13. A "bullneck" of diphtheria is not mumps, but a serious prognostic sign.

14. Not all peritonsillar swellings are due to quinsy.

15. The postdiphtheritic patient with paralysis must be watched carefully for a long period in the hospital.

16. Diphtheria immunization alone does not always protect against diphtheria.

17. Expect and treat diphtheria early, in diphtheria contacts.

Dr. H. H. Joffe: The following discussion of diphtheria is not an original investigation, but rather a brief résumé of some of the literature on the subject, in which an attempt had been made to clarify some of the puzzling clinical variations and pathogenicity of the disease.

Bacteriology

There are numerous Gram positive rods with tendency to club and pointed forms which are widely distributed in nature and as a rule are non-pathogenic. This group of organisms are designated "the diphtheroid group of bacteria" and are morphologically closely related to the one species Corynebacterium diphtheriae called a "true diphtheria organism."[9] This organism in contradistinction to the diphtheroid group is pathogenic by virture of its toxin and the cause of clinical diphtheria. Many diphtheroids are found in the human throat and the contamination of cultures increases the difficulty in differentiating them on smear from the true diphtheria organism. In this connection, it was of interest to learn that the State Department of Health Laboratories in Minnesota[6] do not routinely perform virulence tests on the organisms which are morphologically diphtheria bacilli in cultures from patients clinically diagnosed diphtheria unless the organisms persist in the nose and throat cultures for a period of at least forty days following the first symptoms. The inaccuracy of morphologic diagnosis alone is illustrated in the results of virulence tests at the State Laboratory during 1945. Of 892 such tests run on morphologically typical or suggestive bacilli from a variety of sources, only 382 were proved virulent.

The difference in the colony appearance on tellurite chocolate agar and the comparative variation in the clinical picture of the disease resulted in the recognition of three types:[2] mitis, intermedius and gravis; although a small percentage of strains do not closely resemble any of these types. The mitis strain is usually associated with clinically mild diphtheria and death, if it does occur, is mostly in infants and is due to either obstructive phenomena or pneumonic complications or both. The intermedius strain closely resembles the gravis type in the clinical symptoms produced, but disappears more rapidly in convalescence and does not have the tendency towards epidemic spread. The gravis type has a greater pathogenicity, deeper penetrating power of tissues and greater epidemic potency.

The description of the malignant diptheria is not new and can be found in the writing of Hippocrates and those of the 2nd century A.D. Many epidemics have occurred in various parts of the world with[2] 1,000,000 cases reported on the European continent, exclusive of Russia, in 1943 with a mortality rate of not less than 5 per cent. Diphtheria reached epidemic proportions during this present war and was the[10] leading epidemic disease on the European continent as a cause of both morbidity and mortality. The rate per 100,000 of population, rose considerably in many of the European countries between 1939 and 1943:

Rate per 100,000 of population[2]	1939	1943
France	35.9	118.7
Netherlands	16.6	638.9
Norway	1.8	752.8
Germany	180.9	287.1
Britain	114	84

It can be assumed that the marked increase in the incidence of diphtheria was initiated by war conditions. In the case of Britain it can be assumed that the strict vigilance of sanitary conditions may be one of the causes to account for the decrease in the incidence.

In this country, a small epidemic occurred at Belair, Md., in 1936, and a severe outbreak in Halifax, Nova Scotia in 1941. A malignant type has appeared in Germany and has cast some doubt as to the efficacy of the supposedly satisfactory and conventional method of management. In the Halifax epidemic[10] 69.2 per cent of cases occurred in the age group over fifteen years. As high as 80 per cent of the adults in the general population were susceptible as measured by the Shick test.

It seems probable that the numerous severe outbreaks of diphtheria described in Europe, which were refractory to serum therapy were due to the gravis type of diphtheria bacilli. This refractory character of the diphtheria stimulated many investigations. Anderson and associates[12] at Leeds, England, suggested a casual relationship between the gravis type and malignant diphtheria. Although this received some confirmation, it was noted that in other areas numerous strains which were culturally typical of the gravis type were avirulent as shown by ordinary laboratory tests.[3]

In order to explain the factors involved in the production of malignant diphtheria, the following equation has been suggested:

$$\frac{\text{Toxigenicity of C. diphtheria} + X}{\text{Host resistance}} = \text{Malignant diphtheria}^{3}$$

The possible factors which could be represented by X are: (1) the symbiotic existence of hemolytic streptococci; (2) the occurrence of an alteration in the strains of C. diphtheriae prevalent in an area which would cause them to acquire a greater pathogenicity; (3) unknown toxic substance other than that of C. diphtheriae; (4) individual immunological response to infection. There is no evidence to prove that change of virulence is likely to occur and the possibility of unknown toxic substances must remain as conjectures until further proof is available.[3] The X factor is best expressed by Park, Williams and Krumwiede. They state "when other pathogenic bacteria are associated with diphtheria bacilli they mutually assist one another in their attacks on the mucous membrane, the streptococci being particularly active in this respect, often opening the way for the invasion of the diphtheria bacillus into the deeper tissues or supplying needed conditions for the development of its toxin. As these septic infections due to the pyogenic cocci are in no way influenced by the diphtheria antitoxin, they frequently are the cause of the fatal termination."[3]

The Minnesota Department of Health statistics for the last decade[6] revealed 40 per cent of the diphtheria was in patients over ten years. The morbidity and mortality from the disease had been falling steadily until 1943, since when there has been a gradual rise.

Clinical Recognition

The salient features of malignant diphtheria may be summarized:[12]

1. The symptoms are sudden in onset and very severe.
2. There is frequently an associated cervical cellulitis, giving rise to the "bull neck" appearance.
3. Due to the intense swelling of the pharyngeal parts, respiration is of a snoring type.
4. Thick membrane covers the tonsils, anterior pillars and uvula and at times extends onto the mucous membrane of the hard palate and cheeks.
5. Tonsils may be so swollen as to compress the uvula.
6. Membranes are grayish in color or even darker with blackish hue due to hemorrhage following necrosis of the underlying tissue with development of gangrenous areas.
7. Involvement of the nasal mucous membrane is common with nasolabial excoriations.
8. Temperature is generally higher than the average case and runs a septic course.
9. Evidence of circulatory failure appears early.

In a report of eighteen cases on a United States Naval Hospital ship, ten were originally diagnosed as tonsillitis at the onset of their illness, and one case was mistaken for a peritonsillar abscess, which was incised.[8]

Treatment

The efficacy of the prophylactic use of standard toxoid and alum-precipitated toxoid is generally accepted. The present increase in the frequency of diphtheria and the possible influx of more virulent strains from overseas necessitates a greater use of "booster" or activating doses of toxoid among all age groups of our present population. The Minnesota Department of Health recommends that all children who have been immunized early in childhood should receive booster doses of toxoid before they enter school. In a recent report, Karelitz[5] found 28.6 per cent of 1,283 individuals in the armed forces were Shick positive. These received a booster dose of toxoid, and within four months a high percentage became Shick negative.

Beckman[1] demonstrated a direct relationship between the mortality and a delay in the administration of antitoxin, from an expected mortality of 1.5 per cent on the first day of illness to 14.92 per cent on the fifth day. Norris[8], in an epidemic of eighteen cases, found that where the antitoxin was given within three days of the onset no paralysis developed, whereas, in the cases treated after this period the antitoxin did not prevent paralysis. The more serious types of diphtheria should undoubtedly receive higher dosages of antitoxin. According to Weinstein[14], the degree of "bull neck" bears a direct ratio to the degree of toxication, and doses as great as 160,000 units of antitoxin are of no avail once the condition has fully developed. In a group of thirty-six deaths from diphtheria, Togasaki[13] reported twenty-two had required tracheotomy. Bronchopneumonia and toxic myocarditis headed the list of complications.

Clinical and experimental[7,12] proof has been submitted that the use of sulfonamides and penicillin do not affect B. diphtheriae directly. However, these drugs may be very efficacious in their prophylactic and therapeutic effect upon streptococci and other organisms, which may well have a symbiotic relationship with the diphtheria organism.

Conclusion

It is obvious that the low incidence of diphtheria in this community has led to a feeling of security and a depreciation of ability to recognize and treat this disease. There undoubtedly has developed large numbers of individuals, particularly among adults, who are now susceptible to diphtheria and may become the fuel for an epidemic of a malignant type of diphtheria, possibly brought to this country by carriers among our armed forces. The diagnostic and therapeutic lessons gained from a study of the reported six cases of diphtheria have been summarized under Discussion. Some of the recent trends in the literature concerning epidemiology, malignant diphtheria, practical bacteriology, activating or "booster shots," and the importance of early antitoxin therapy, are briefly reviewed from the literature.

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(Continued on Page 349)

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from March issue)

Physicians in Fillmore County

Physicians were in Fillmore County, of course, as early as 1852, although dispensers of propaganda in encouragement of colonization gave them scant recognition. From the beginning, Minnesota, first a territory and, in 1858, a state, was proclaimed to yield to no region in the world in point of salubrity of climate. In the fifties and sixties, when the state government was actively encouraging immigration, newspapers throughout Fillmore County, as elsewhere in the state, published comments like this: "Hardly a day passes without our seeing numerous wagons loaded with men, women and children traveling along our roads. Many from Iowa, Illinois, Indiana and other states. The healthy air of Minnesota will take off that sickly aguish look of most of them . . . let them come! There is room for all—and more too." As to medical practitioners, J. W. Bishop, in his *History of Fillmore County*, of 1858, said, in part: "Thoroughly qualified physicians walk among us 'harmless as doves' in this horribly healthy country!" In those early years the general idea was that the physician's chief usefulness lay in surgical cases and in obstetrical cases (complicated) and in attending such patients as might contract chickenpox, measles, smallpox or diphtheria.

The need and opportunity for physicians soon were recognized, however, and although statistics have not been available for comparison of Fillmore County with other counties in number of physicians, it seems probable that with the possible exception of Ramsey and Hennepin Counties, which had as drawing cards St. Paul and St. Anthony (Minneapolis) at the head of navigation on the Mississippi River, this large southern County of Fillmore, lying in one of the main paths of immigration, received in the nineteenth century as large a representation of medical practitioners as any other county in the state. Certainly there is record, scant or full, of many physicians, permanent or temporary. Scanning of such old newspapers of various years as have been available to the writer has yielded, in addition to those learned from other sources, the names of sundry practitioners who remained in the county probably a few months or a year or two and were heard of no more. If such record is indicative, there must have been, over a period of decades, many more than are mentioned herein of this unsettled type, who were frankly itinerant or who with some appearance of stability moved from town to town in the county before going on into other sections of the state or the country.

Among the total number of physicians, especially of those who came in the fifties, sixties, seventies, and into the early eighties, there undoubtedly were men of little knowledge and less training who had no legitimate excuse to call themselves "doctors." An occasional veterinarian found it expedient to treat human patients as well as domestic animals and poultry; in fact, physicians occasionally found it well to treat domestic animals. There were vendors of patent medicines, hydrotherapists, bone-setters, herb doctors (botanic and physiomedical schools were the forerunners of eclectic medical institutions, although "herb doctors" probably had not been within their portals). There were honest representatives of the preceptor system alone and of the preceptor system combined with instruction or lectures at medical colleges: eclectic, homeopathic and regular (in the early period *allopathic* was used often to indicate the regular system of medicine and surgery), of one or the other of which many were graduates. Some of the finest practitioners came from universities and medical schools of Norway, Sweden, Holland, Germany and Britain and exerted a constructive influence on the growth of medical practice in the new land; some of the worst purported to come from foreign schools. There were many representatives of the various eclectic colleges of Cincinnati and Chicago and of the homeopathic schools, particularly the Hahnemann Medical College of Chicago in its different alliances. Worthy of mention, there were graduates of some of the smaller medical schools of New England and neighboring states which supplied the Middle West with perhaps her soundest medical pioneers. Among these institutions, in Vermont, were the University of Vermont and the Castleton Medical College (Vermont Academy of Medicine); in Maine, the Medical School of the University of Maine and Bowdoin Medical College; in New York, the College of Physicians of the Western District of New York, at Fairfield, the Geneva Medical College, the Albany Medical College and the University of Buffalo Medical College. These schools at least tried to set standards high and to insist on good preliminary education. There were a few men from the greater medical schools of the Atlantic seaboard and from McGill University in Montreal. Graduates came also from the schools of the Middle West: the Miami Medical College (later the Medical College of Ohio), Rush Medical College, the Chicago Medical College (later the Medical Department of Northwestern University), the Medical School of the University of Michigan, the College of Physicians and Surgeons of Keokuk (Iowa), and the Missouri Medical College, to name only a few. Beginning in the eighties came men from the schools of Minnesota: the Minnesota College Hospital (later the Minnesota Hospital College), the Minneapolis College of Physicians, the Minnesota Homeopathic Medical College and the St. Paul Medical College, and, finally and chiefly, the Medical Department of the University of Minnesota, after the establishment of which medical education became a function of the state. As told by many writers on medical history in Minnesota, two of the early medical schools that had functioned in Minneapolis and St. Paul (the Minnesota Hospital College and the St. Paul Medical College) joined in forming the medical department, first known as The College of Medicine and Surgery, of the university; others subsequently united with the university school; others passed out of existence.

A constantly recurring pattern among the physicians who came in the earlier decades of this second half of the nineteenth century was the birth and education abroad or in the eastern United States and the trek to the Middle West broken into stages by residence of years, perhaps, in one or more places en route. Occasional mention is seen of practitioners among the earliest of the pioneer physicians who were of such decided personality and opinion that they antagonized their patients and thereby lost in material benefit, but whatever their temperaments they all must have been strong characters, because no weakling would have chosen to break trail in a new country of crude living conditions that still was not free from threat of attack by Indians.

Because the physician's relationships were with settlers in large communities, in townships rather than in villages alone, the townships of Fillmore County are named here, from east to west in four tiers from south to north. In the first and southernmost tier, bordering on Iowa, are Newburg, Canton (originally Elyria), Harmony, Bristol, York and Beaver Townships; in the second, Preble, Amherst, Preston, Carimona, Forestville and Bloomfield; in the third, Norway, Holt (Norway and Holt together once were Douglas), Carrolton, Fountain, Fillmore and Spring Valley; and in the fourth and northernmost tier, Rushford, Arendahl (early a part of Rushford), Pilot Mound, Chatfield, Jordan and Sumner.

It is difficult to say who was the first physician* so-called, in Fillmore County, but of the established practitioners of unquestionably high repute, probably the first was Dr. William C. Pickett, in 1852, one of the sons of a family who had pioneered from New York to Indiana some years earlier. Dr. Pickett shortly returned with his traveling companions to Indiana and in the following summer came back to Fillmore County with a group of four Pickett families and was the moving spirit in the founding of Carimona Village in Carimona Township. The next few who came, between 1853 and 1858, were: Horace W. Pickett and Henry L. Wilson to Carimona; Nelson W. Allen, Refine W. Twitchell, Augustus H. Trow, D. N. Morse, Isaac S. Cole and Luke Miller, to Chatfield, Chatfield Township; Erastus Belden and Wallace P. Belden, father and son, to Hamilton, Sumner Township; J. Early, H. Gilbert and William H. Dean and, possibly, T. E. Loop, to Spring Valley, Spring Valley Township; Lafayette Redmon and John W. Crees to Preston, Preston Township; H. Curtis to Fillmore, Fillmore Township; Robert A. Sturgeon and Thomas Little to Elliota and James M. Wheat to Lenora, both villages in Canton Township.

The roster of physicians of Fillmore County which follows is submitted with full consciousness of its obvious defects. The men are named alphabetically in the known or estimated decades of their arrival, with the first known village and township of the practice of each. It should be stated that some of these men were born in the county and spent their entire lives there with the exception of years given to medical study elsewhere. Others came there as children of pioneer parents, went away for their medical schooling and returned to practice. Still others, who came as physicians from the outside, spent a professional lifetime in one place. Many, of all groups, changed locations within the county once or several times, and many others resided in the county a relatively short time. Of some the exact date of arrival is known, of others it can be said only that they arrived in the fifties, or in the sixties before 1866, for instance, or that they may have been long in the region but not in Fillmore County until the seventies or eighties or some other period. In the sketches these facts will be made clear whenever possible. And, although the statement is not truly germane, it may be said that other men, like John C. Nelson, later of St. Paul, who came under the influence of the pioneer physicians and who received inspiration to study medicine while working in the early well-known drugstores of Fillmore County, did not return to the county after qualifying as physicians but achieved notable medical careers elsewhere.

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*Although individual physicians are mentioned in this narrative, by decades of arrival and in connection with the organization and development of medical practice in the county, biographical detail is reserved for the series of sketches which are appended and which to some extent carry the thread of the story, showing forth mannrs, customs and events.

ROSTER OF PHYSICIANS IN ORDER OF ARRIVAL BY DECADES†

1852-1899

Name	Village	Township
1852-1859		
Allen, Nelson W.	Chatfield	Chatfield
Belden, Erastus	Hamilton	Sumner
Belden, Wallace P.	Hamilton	Sumner
Cole, Isaac S.	Chatfield	Chatfield
Coleman, W. F.	Chatfield	Chatfield
Crees, John F.	Preston	Preston
Curtis, H.	Fillmore	Fillmore
Dean, William Henry	Spring Valley	Spring Valley
Early, J.	Spring Valley	Spring Valley
Everts, Sylvanus	Rushford	Rushford
Gilbert, H.	Spring Valley	Spring Valley
Little, Thomas	Elliota	Canton
Mac, Adolph	Rushford	Rushford
Masse,—(Morse?)	Chatfield	Chatfield
Miller, Luke	Chatfield	Chatfield
Morse, D. N.	Chatfield	Chatfield
Pickett, Horace W.	Carimona	Carimona
Pickett, William C.	Carimona	Carimona
Redmon, Lafayette	Preston	Preston
Sturgeon, Robert Anderson	Elliota	Canton
Trow, Augustus Howland	Chatfield	Chatfield
Twitchell, Refine Weekes	Chatfield	Chatfield
Wheat, James Madison	Lenora	Canton
Wilson, Henry L.	Carimona	Carimona
1860-1869		
Bingham, —	Lanesboro	Carrolton
Burkaus, —	Lanesboro	Carrolton
Case, Orson A.	Preston	Preston
Dickson, John C.	Chatfield	Chatfield
Donnelly, M.	Lanesboro	Carrolton
Eighmy, J. W.	Hamilton	Sumner
Everts, Thomas Heywood	Rushford	Rushford
Graves, J. A.		
Grover, Henry C.	Rushford	Rushford
Haslam, William	Chatfield	Chatfield
Hoyt, Robert	Lenora	Canton
Huffman, —	Preston	Preston
Jones, J. R.	Lanesboro	Carrolton
Kierland, Elling P.	Rushford	Rushford
Kierland, Peter E.	Rushford	Rushford
Kingsbury, E. J.	Spring Valley	Spring Valley
Kingsbury, W. B.	Spring Valley	Spring Valley
Loop, T. E.	Spring Valley	Spring Valley
Moore, Russell Lucretius	Forestville	Forestville
Morey, J. J.	Spring Valley	Spring Valley
Morrison, —	Chatfield	Chatfield
Murray, —		
Plummer, Albert	Hamilton	Sumner
Reynolds, Lewis	Granger	Bristol
Robbins, Calvin Hubbard	Fillmore	Fillmore
Ross, John Angus	Preston	Preston
Thomas, H.	Chatfield	Chatfield
Viall, Lyman	Spring Valley	Spring Valley
Wallace, S. W.	Preston	Preston
Whitman, Alvah Fancher	Spring Valley	Spring Valley
Willis, G. M.	Carimona	Carimona
Wilson, —	Chatfield	Chatfield
Wold, O.	Rushford	Rushford
1870-1879		
Bemis, J. G.	Lanesboro	Carrolton
Bendeke, Karl O.	Rushford	Rushford
Britts, David A. S.	Lanesboro	Carrolton
Craig, N. S.	Granger	Bristol
Denninger, Paul G.	Spring Valley	Spring Valley
Fate, Jesse C.	Chatfield	Chatfield
Grannis, E. H.	Chatfield	Chatfield

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†Full names are given when known.

Hall, Thomas Edmund	Lanesboro	Carrolton
Haskins, Henry Howard	Elliota	Canton
Hoyt, Robert W.	Lenora	Canton
Hvoslef, Johan Christian	Lanesboro	Carrolton
Jacobson, Charles H.	Preston	Preston
Jones, Henry	Granger	Bristol
Lathrop, Don J.	Granger	Bristol
Love, George Allen	Whalan	Holt
Magelssen, Jacob Wright	Rushford	Rushford
Mecklenberg (See Van Mackelenberg)		
Phillips, James Henry	Wykoff	Fillmore
Pingree, M. G.	Spring Valley	Spring Valley
Powell, David Frank	Lanesboro	Carrolton
Powers, Albert Wentworth	Fountain	Fountain
Ring, Hogan, J.	Whalan	Holt
Sackett, Reuben Nathaniel (early; decade not certain	Chatfield	Chatfield
Spencer, Reuben Farmer	Etna	Bloomfield
Thornhill, French W.	Spring Valley	Spring Valley
Trow, Milton Augustus	Chatfield	Chatfield
Trow, William Howland	Fillmore	Fillmore
Van Mackelenberg, Frans Josef	Forestville	Forestville
Von Lackum, P.	Preston	Preston
Wagner, Charles H.	Spring Valley	Spring Valley
White, A. C.	Preston	Preston

1880-1889

Atkinson, —	Chatfield	Chatfield
Bell, Howard	Lanesboro	Carrolton
Coates, William Bicknell	Harmony	Harmony
Darey, J. Herbert	Granger	Bristol
De Cousens, John R.	Lanesboro	Carrolton
Halloran, Florence John	Chatfield	Chatfield
Hammer, —	Pilot Mound	Pilot Mound
Hoftoe, Ole T.	Fountain	Fountain
Johnson, J. Ross	Spring Valley	Spring Valley
Keller, Francis	Preston	Preston
Kendall, Herbert	Spring Valley	Spring Valley
Knowles, S. H.	Preston	Preston
Leprohon, —	Lanesboro	Carrolton
Miller, —	Waukokee	Carimona
Meredith, Simeon Paul	Spring Valley	Spring Valley
O'Brien, D. F.	Canton	Canton
Onsgard, Lewis K.	Harmony	Harmony
Parker, Wellington Daniel	Spring Valley	Spring Valley
Powell, George	Lanesboro	Carrolton
Powell, William A.	Lanesboro	Carrolton
Pritchard, Donald Bannerman	Rushford	Rushford
Sackett, Jay Le Roy	Lenora	Canton
Schoolcraft, —		
Stephens, Aaron Marshall	Chatfield	Chatfield
Tamblin, Jerome B.	Lanesboro	Carrolton
Timmons, Isaac Whittington	Chatfield	Chatfield
Vance, G. H.	Fillmore	Fillmore
Veenschoten, T.	Greenleafton	York

1890-1899

Bakke, Peter Halstensen	Preston	Preston
Cady, Charles William	Mabel	Newburg
Campbell, George Elmore	Wykoff	Fillmore
Carr, S. M.	Pilot Mound	Pilot Mound
Conkey, Robert L.	Canton	Canton
Cooper, Charles McHenry	Chatfield	Chatfield
Drake, Frederick Arthur	Lanesboro	Carrolton
Eby, John Robert	Spring Valley	Spring Valley
Gowdy, Francis Adelbert	Granger	Bristol
Heiberg, A. O.	Rushford	Rushford
Hunt, Thomas W.	Lanesboro	Carrolton
Jackson, George E.	Chatfield	Chatfield
Keeney, Mrs. Emma Adeline	Spring Valley	Spring Valley
Kendrick, William Nassau	Spring Valley	Spring Valley
Lommen, Andreas Pederson	Mabel	Newburg
MacDonald, Alexander*	Chatfield	Chatfield
Meidell, Roy A. O.		

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*The name of Dr. Alexander MacDonald is included because, although he was not in Fillmore County until 1901, he had been in southern Minnesota since 1883, and he has been (1944) in Chatfield forty-three years.

Nass, Hildus Augustinus O.	Mabel	Newburg
Onsgard, Christen K.	Rushford	Rushford
Ray, Charles Wilbur	Canton	Canton
Richardson, Walter Earl	Preston	Preston
Shipman, Louis Dwight	Preston	Preston
Thompson, Edward R.	Harmony	Harmony
Utley, John Darwin	Spring Valley	Spring Valley
Walker, Charles Carroll	Chatfield	Chatfield

Intercounty and Interstate Practice.—In all decades physicians extended their practice into several townships and into neighboring counties and even into neighboring states. Fillmore County practitioners were called into all contiguous counties in Minnesota and into Howard and Winnesheik Counties of Iowa, and men of those counties were in turn known in Fillmore County. Notably, Dr. G. M. Alsdurf, an eclectic physician and surgeon, an early arrival at Le Roy, Mower County, and a few years later at Spring Valley, Fillmore County, began at once to treat the sick of a widespread territory; "happening to strike the place (Le Roy) just in one of those terrible scourges, an epidemic of diphtheria, he had business immediately and went right into an extensive practice, in the counties of Mower and Fillmore, in Minnesota, and Howard and Mitchell, Iowa." John Lewis Martin, physician and preacher, chiefly of Dodge County, but also of Olmsted, Jackson and Mower Counties, is said to have practiced in Fillmore County. He has been described as a small, wiry, bewhiskered man, dignified and respected, who rode on horseback to make his professional calls and to relieve in the pulpits of his brother clergymen. Of a much later generation, Henry S. Plummer, native of Fillmore County, later of Mower County and Olmsted County, in his early years as a physician practiced from Mower County with his father, Dr. Albert Plummer (Fillmore County, 1869-1893; Mower County, 1893-1911), into Fillmore and Olmsted Counties. From Fremont, Winona County, William Shaw Morrison, a pioneer physician for many years maintained an office in Chatfield also and on two days a week saw patients there.

From various other counties in Minnesota in the eighties and nineties the following physicians filed their licenses in Fillmore County, although record has not been noted that they ever resided there: John T. Billington, Yellow Medicine County, 1887; N. D. Satterlee, Jackson County, 1888; Halfdan Slippern, Hennepin County, 1897; George B. Hamline in 1898 and John Edmund Doran in the same period; and Herman Russell, Olmsted County, in 1899.

From Iowa, Fordyce Worth, of Hesper, Winnesheik County, long practiced in the vicinity of Mabel, Newburg Township, and was licensed in Minnesota in 1887. Other Iowa physicians who were licensed to practice in Fillmore County were John W. Reed, Frank Fremne and Daniel M. Sage, in 1884, and Francis J. Ledbrook, in 1896, all of Howard County. From Wisconsin were registered Thomas Thorkelson, of Trempeleau County, in 1896, and George A. Morley, of Juneau County, in 1898.

In the series of biographical sketches to come, notes have been included on three of these men from outside Fillmore County, who no doubt were typical of many.

(To be continued in May issue)

President's Letter

EXCELLENT ANNUAL MEETING FORECAST

YOUR State Meeting this year is to be the acme of all state medical meetings, probably surpassing in variety and excellence all previous or other meetings except that of the American Medical Association. From scientific discussions to commercial exhibits, the meeting promises features worthy of the history-breaking attendance which seems assured.

That it is to be *your* meeting has been the primary objective of both the Executive Secretary and the Program Committee. Questionnaires were sent by the Executive Secretary to every military and civilian member of the Association. Essentially these asked only two questions: "What scientific subjects do you wish presented?" and "How can the State Meeting best be planned and arranged for your needs or desires?" From the response to these questions, the Program Committee and Executive Secretary designed and arranged the entire conclave. So, your needs, desires and requests were the nucleus from which the meeting was fashioned.

On the scientific program are to be found outstanding papers and lectures by leading authorities in the various fields, round table discussions conducted by one or more prominent clinicians, special sectional sessions with physicians of national renown as guest speakers, and actual demonstrations of the most up-to-date technics, procedures and methods. Subjects on the program of scientific lectures include: surgery of the gall bladder and pancreas, coronary disease, brucellosis, malaria and other tropical diseases, sulfonamides, penicillin and streptomycin, surgery of thrombophlebitis and embolism, obstetrical shock, third stage of labor, the Rh factor and transfusions, "punch" and suprapubic prostatectomy, endocrinology, intervertebral disc x-ray study, and a whole symposium on hospital subjects.

For round table luncheons such topics as the following have been arranged for full and free discussion by all present: thiouracil, allergy, burns, esophageal obstructions, amino acids, arthritis, anesthesia, varicose veins, gall-bladder surgery, dermatology, ulcerative colitis, rheumatic fever, tuberculosis and poliomyelitis. Here is a place to present your clinical problems for a wealth of consultative opinion.

Special sectional sessions of the Minnesota Academy of Ophthalmology and Otolaryngology, Minnesota-Dakota Orthopedic Club and the American College of Chest Physicians will be held one morning for each group. And on Monday afternoon can be heard the Carman Lectureship in Radiology, while Tuesday afternoon will have a special pediatrics lecture by a nationally prominent pediatrician.

Ringworm of the scalp (tinea capitis), blood plasma and obstetric manikin demonstrations will be so arranged as to have one or another of the three each morning and afternoon. Besides these, special scientific exhibits or demonstrations have been requested from 31 agencies, groups or committees including several hospitals and sanatoria, various clinical committees, allied professional groups, veterinarians and pathologists.

Over and beyond this grand array of clinical and scientific information, commercial exhibits of every nature and description will accentuate the necessity for your attendance and participation. The newest drugs, pharmaceuticals, appliances, apparatus, equipment, methods, procedures technics, books, periodicals and literature will be on display in the greatest profusion in one of the largest commercial exhibitions yet seen.

You can use it for what it was planned, the most intensive and well-balanced of refresher courses. Whether specialist or general practitioner, it cannot miss your needs and fancy. So let's all make it the biggest and best medical meeting ever held in Minnesota.

Edwin J Simons

President, Minnesota State Medical Association

◆ Editorial ◆

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE USE AND ABUSE OF PARENTERAL FLUIDS

VALUABLE as the administration of parenteral fluid may be, one can err seriously in giving too much fluid containing electrolytes to patients who need only glucose in water or in not giving fluid containing electrolytes to patients who need them.

The normal adult drinks 1500 c.c. or more of liquid daily. In addition he obtains about 1200 c.c. of liquid from his food. The moisture lost through insensible perspiration and expired air amounts to about 1200 c.c. so that the liquid obtained from food balances approximately that lost from the skin and lungs. The 1500 c.c. of liquid drunk during the day is necessary for proper kidney function in the elimination of salts and waste products of nitrogen metabolism. Fever, high environmental temperatures, and exertion even without sweating increase the loss from skin and lungs and consequently increase the fluid requirement.

If, for any reason, a normal amount of fluid cannot be taken by mouth, parenteral fluid is indicated. Following an operation for instance, when a patient is unable to eat or drink, he requires from 3000 to 4000 c.c. of parenteral fluid to prevent dehydration. All this should not be given in the form of physiological saline or lactate-Ringer's solution. Acutely ill patients and particularly postoperative surgical patients tolerate excess sodium chloride very poorly. Pulmonary edema, peripheral edema and oliguria can result from the use of too much saline solution in such patients. The normal daily intake of sodium chloride ranges from 4.0 to 10.0 Gm. so the administration of saline parenterally should be limited to 4.5 Gm. sodium chloride in each twenty-four hours unless there is an abnormal fluid loss by fistula, drainage, et cetera. It should be remembered that physiological saline solution contains 9.0 Gm. of sodium chloride per liter and lactate-Ringer's solution contains 6.0 Gm. of sodium chloride and 2.7 Gm. of sodium lactate per liter. Three liters of saline solution contain 27.0 Gm. of Sodium Chloride and the same volume of Ringer's solution contains 18.0 Gm. of sodium chloride and 8.1 Gm. of sodium lactate. It should be remembered too that plasma, amino acid solutions and blood contain sodium chloride and other sodium salts in appreciable amounts.

If gastric or duodenal suction has been instituted, there is need for additional parenteral fluid and sodium chloride to replace that lost through the suction. Fluids obtained from the stomach and duodenum contains approximately an equivalent of 5.0 Gm. of sodium chloride per liter. Fluids and sodium chloride lost by suction should be replaced. Determination of plasma chloride levels at intervals is essential if suction is continued for many days, for the above replacement rule represents minimal requirements.

There are many conditions which cause dehydration by the excessive loss of both water and electrolytes: copious vomiting from pyloric obstruction, intestinal obstruction or other causes; severe diarrhea; drainage from external biliary, pancreatic, and other fistulas; transudation or exudation of fluid from large denuded or burned areas; profuse sweating; diabetic acidosis with loss of fixed base combined with acetone bodies; and excessive loss of sodium chloride in the urine of patients with Addison's disease. Serious errors can be made by failing to supply adequate sodium chloride (or sodium chloride with sodium lactate or bicarbonate) in the appropriate instances. Each of the above causes of dehydration represents a special problem and cannot be discussed here, but it must be emphasized that these conditions must be recognized and treated properly.

In medical cases it is just as important to preserve electrolyte balance. If the kidney function is impaired to such an extent that the blood urea nitrogen and creatinine are increased, water is needed in larger volume than in normal individuals for the elimination of metabolic products. If the plasma chloride is normal or elevated in the presence of edema, sodium chloride in the diet or saline solution parenterally is contraindicated. Parenteral fluid in the form of glucose in distilled water may be given. Schemm has shown that in the presence of edema of nephritic or cardiac origin, fluid without salt and an acid ash diet will help reduce edema by their diuretic action. Saline solution will only aggravate the edema present and tend to produce pulmonary edema. Water should not be restricted even in the presence of edema but may be forced if the salt intake is restricted.

Edmund B. Flink, M.D.

STUDY OF CHILD HEALTH SERVICES

THE Council of the Minnesota State Medical Association at its recent meeting in Minneapolis approved a plan for conducting a Survey of Child Health Services throughout the state. In order that every physician in the state of Minnesota will be fully informed on the purpose and plan of this study, regular announcements regarding its various phases will be made from time to time through the office of the Minnesota State Medical Association. The action of the Council has been made public but a more detailed explanation for the physicians of the state is in order at this time.

The American Academy of Pediatrics, at the annual meeting in St. Louis in November, 1944, formulated a plan which is being carried out by a special committee under the direction of Dr. John P. Hubbard, who was a member of the Children's Hospital Staff in Boston until he entered the Medical Department of the Army. The organization of this survey has now been completed.

The reason for inaugurating this study arose from the realization that, if all children are to receive the care they need, systematic planning is necessary. It was felt that the responsibility for such planning should rest on the physicians themselves. Physicians know what constitutes good care; physicians for the most part provide this care and they are the ones who should develop and conduct such a program. However, in order to develop a plan, facts regarding the services available must be determined.

One purpose of the study is to stimulate groups and individuals to evaluate the existing facilities and to determine the needs within their own communities. Unless physicians undertake this task, others less qualified will, as has been indicated by proposed legislation now before Congress.

The content of the study falls into four categories:

1. Hospital facilities.
   Information on pediatric care will be sought from all hospitals: general, pediatric and maternity; convalescence homes; tuberculosis sanatoriums and so forth.
2. Community health services, public and private.
   Information will be sought regarding the extent and quality of child health conferences, school health services, child guidance clinics, immunization programs and public health nursing.
3. Distribution and qualifications of professional personnel and available services.
   Information will be requested from pediatricians, general practitioners and specialists who care for children. The availability of physicians and of procedures employed in medical care, such as transfusion, intravenous administration of fluids, artificial respiration, administration of oxygen and laboratory work, will be determined.
4. Pediatric education.
   A special committee will study the sixty-six medical schools throughout the country to determine the quantity and quality of pediatric teaching.

When the study has been completed, a report will be prepared which will be available to all who care to use it. It will be a collection of facts which may be used as a basis for sound recommendations for medical care.

Members of the American Academy of Pediatrics are committed to aid in this study of child health services.

Responsibility for the organization and inauguration of the study within each state was delegated to the state chairman of the Academy who, with the help of a full-time executive secretary, will carry it out. The state chairman of the Academy for Minnesota is Dr. Roland Nutting who has recently been named to succeed Dr. R. L. J. Kennedy. Full and active support of the pediatricians in Minnesota has been pledged to the study.

Because it is recognized that physicians are exceptionally busy, plans for obtaining the necessary information have been made as simple as possible. The pediatricians, who will be informed of the details of the plan will be called on to contact individual physicians and groups of physicians throughout the state and explain the purposes and details of the plan.

Questionnaires will be used and they will be of several types: those intended for pediatricians, for physicians in private practice, and for hospitals. Local medical societies will be kept informed and local health officers will be asked to take part in the study.

All publicity in connection with the study will be released from the office of the Minnesota State Medical Association. Funds to cover the cost of the study may be obtained from several sources. A request has been sent to the Minnesota State Board of Health asking that funds allocated under Section B, Title 5, of the Social Security Act be made available and it has been requested that the Director of Child Hygiene be instructed to participate in the Study.

Notice has been received from the national office of the survey that the National Foundation for Infantile Paralysis has instructed its regional directors and field representatives to co-operate in this study and to make available funds with which to help defray its cost. The Kellogg Foundation at an earlier date also has made help available.

The desirability of this child health study is quite apparent since the data which will be made available can be used not only for planning by the physicians but also to refute erroneous statements which may be made in support of ill-advised legislation.

It is expected that the actual work of this study will begin in the very near future. This study is of vital concern to the physicians of the state and deserves their full co-operation.

Roger L. J. Kennedy
Chairman, Child Health Committee
Minnesota State Medical Association

THE STATE MEETING—MAY 20-22, 1946

LAST year war restrictions prevented the holding of our annual State Medical Association meeting, except for the House of Delegates. This year the ninety-third annual meeting promises to be unhampered in every way. Those who have been away in the service will have the opportunity of meeting again former friends whom they have not seen for several years or more. Let us make the meeting a real reunion.

The program is being mailed to members well in advance of the meeting. Every effort has been made by the Program Committee to select subjects of new and general interest for the general sessions. On Monday morning, the Minnesota Academy of Ophthalmology and Otolaryngology will hold a separate session; on Tuesday morning the Minnesota and Dakota Orthopedic Club; and on Wednesday morning the Minnesota Chapter of the American College of Chest Surgeons. A scattering of out-of-state talent will add to the program to be presented by local talent in all the sessions.

Demonstrations on Ringworm of the Scalp by the Committee on Child Health and the State Department of Health; on Blood Substitution by the Committee on First Aid and the Red Cross; and Manikin Demonstrations by Dr. M. E. Davis of Chicago will be held each day, and some twenty round-table discussions which have proven so popular of late will add materially to the value of the meeting.

The Saint Paul Surgical Society is writing all interested to attend a dinner meeting Monday evening at which Dr. George M. Curtis of Columbus, Ohio, will be the guest speaker. The annual banquet Tuesday evening will be especially popular as it will be addressed by Dr. James L. Morrill, president of the University of Minnesota, and Dr. Edwin J. Simons of Swanville, president of our State Medical Association.

Make your hotel reservation early or write one of your Twin City friends you are open for an invitation.

CLINICAL-PATHOLOGICAL CONFERENCE

(Continued from Page 339)

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNTY AND DISTRICT OFFICERS DISCUSS CURRENT MEDICAL PROBLEMS IN STATE

Veteran medical care, prepaid medical service, and the blood plasma and cancer programs for the state were discussed at the annual meeting of the officers of the thirty-four county and district medical societies held Saturday, March 2, in Minneapolis.

Attendance at the conference was over 100, which represents a doubling of the total attendance at last year's session.

What the Veterans Administration expects of Minnesota physicians in carrying out its program of providing the best possible care for the returned GI was explained to the group by Mr. Carl D. Hibbard, manager of Minnesota Veterans Administration, and Dr. Einar Andreassen, recently appointed regional medical director in this area.

"We are in complete agreement with General Bradley in his policy of having local doctors treat veterans wherever possible," Mr. Hibbard said. He reported that within the last three months the number of veterans requiring the assistance of the administration has tripled; and, therefore, it is more important than ever that private physicians assume some of the care of these men.

Family Physician Well Qualified

The veteran's family physician is better qualified than a stranger to care for the veteran since in many cases he has known the patient since birth and may have treated him for childhood diseases or injuries. The family doctor knows the patient's economic status, the nature of his work and even what arrangement for treatment would be most convenient for the patient.

The Veterans Administration is calling upon doctors to make physical examinations for establishing ratings or pensions, Mr. Hibbard said. The doctor's statement will be used by the VA rating board which is composed of a medical specialist, an occupational specialist and a legal specialist. The complete and detailed medical information which the doctor's report will contain is to be used to insure fair and proper rating of cases for pension purposes. The medical member of the board will interpret the medical statements to the other two members; the occupational specialist will determine from the report and the interpretation whether a disability exists and the extent; the legal member will have the say as to whether the law allows pension or compensation for the individual case. The fairness and impartiality of the final judgment in each case, said Mr. Hibbard, will depend upon the completeness of the individual physician's report.

Information should include complete medical history of each disability, disease or injury for which the veteran makes a claim, supported by medical findings, diagnoses and conclusions.

Assure Vets in Rural Areas Proper Care

Dr. Andreassen stressed the importance of another problem of the Veterans Administration, that of the veteran living in a rural area where there may be a skilled physician available, but where there is a lack of equipment and technical aid such as laboratories, x-ray or hospitals. The administration hopes to see a system in effect where the local physicians will make examinations and where possible give necessary treatment, but, hospital and technical facilities lacking, the physician will refer the veteran to the nearest community where he can get proper care.

The Minneapolis Veterans hospital, he said, operating under the new department of medicine and surgery and staffed by men from the University of Minnesota, will be able to handle such cases. An arrangement has been made with the Mayo Clinic to handle certain cases.

It was brought out in the discussions that ordinarily outpatient treatment for service-connected disabilities must be authorized in advance of treatment by the Veterans Administration. However, if a veteran is in need of prompt, emergent treatment and eligibility can be determined from the veteran's papers, the physician may give the necessary treatment, provided he requests authority to do so by mail not later than five days after giving the treatments.

Need for Filing Claim Cited

Dr. Andreassen warned that doctors will undoubtedly be visited by veterans who have not established nor filed claims of service connection for their disabilities. When a veteran does not have a letter from the Veterans Administration stating that service connection for his disability is being allowed, the procedure is to question the veteran to determine whether he has the necessary prima facie evidence. A veteran's statement that he needs treatment for a disability which he believes to be service connected will be accepted by the Veterans Administration as an informal claim which is pending adjudication. The medical statement and the veteran's statement should be sent immediately to the Manager, Veterans Administration, Regional Office.

Dr. Richard B. Hullsiek, chairman of the Medical Advisory Committee on Veterans Affairs, outlined the problem facing civilian doctors when situations arise where veterans after having been out of service several weeks or months become ill and go to their local doctor and either on original examination or after repeated examinations it is determined that they need hospitalization or further medical care. The first thing for a doctor to remember in each case, he said, is that the veteran must put in a claim in order that authority can be granted by the Veterans Administration for medical care that will later be authorized and paid for by the Administration.

The committee is now at work on a plan for Minnesota wherein a satisfactory fee schedule and contract satisfactory to the Veterans Administration and the physicians of the state will be developed which will enlist the service of all physicians to render veterans outpatient care.

University's Contribution Described

Dr. John R. Paine of the University of Minnesota hospitals staff discussed the assumption by the University Medical school of the medical care of patients at the Minneapolis Veterans hospital, a program which has been in effect since November of last year. The two main purposes of the program, that of giving veterans the best medical and surgical advice and treatment available, and of furnishing postgraduate training for a large number of carefully chosen doctors and making specialists of them, were described. The examining boards, Dr. Paine said, have all indicated their willingness to accept training at this hospital as suitable for candidates for certification when the Medical school has acquired the proper staff and has instituted a suitable program.

Measures taken to insure the best of medical care for hospitalized veterans, he said, are already bearing fruit. The most important accomplishment has been the augmentation of the clinical staff of the Veterans hospital. Where previously one doctor had to care for as many as eighty to ninety patients, he now is responsible for no more than twenty to twenty-five. The University program has instituted a department and staff of anesthesia. Up to the present time there has never been trained anesthetists in any of the Veterans hospitals, but now at the Minneapolis hospital veterans undergoing surgery receive the best of modern anesthetic techniques.

Much has been done to alleviate crowding in the hospital by early ambulation following operation and the increasing of the operating room suite from two to six rooms, which is eliminating much pre-operative hospitalization.

"Best Care for the Most at the Least Cost"

Dr. B. J. Branton of Willmar in describing the proposed prepaid medical plan for Minnesota said that what we here in Minnesota want is "the best care for the most people for the least cost."

Minnesotans, he said, are lovers of freedom and democracy and do not want any compulsory type of sickness insurance thrown at them.

The Minnesota State Medical Association at its last House of Delegates meeting elected two men from each of the nine component districts and six delegates-at-large (a total of twenty-four, as a committee to lay groundwork for the establishment of the Minnesota plan.

This committee has studied the plans of many states, finding the one in Michigan to be the best of the non-profit corporations. However, Dr. Branton declared, Minnesota needs "a plan of its own" not a copy of another; it needs a plan which will suit the farmers as well as the businessmen, the specialists in the cities and the rural practitioners, one which will provide not only obstetrical or surgical care, but one which will provide medical care too.

State Plans Co-ordinated at National Level

Speaking to the officers on the proposed national plan for prepaid medical service, Dr. A. W. Adson of Rochester reviewed the work done by the AMA Council on Medical Service and Public Relations in exploring a number of fields for the purpose of setting up a national program. A series of meetings had been held, he said, to examine various suggestions. Dr. Adson described the setting up of the Associated Medical Care Plans Incorporated, the purpose of which was to seek mutual co-operation between all voluntary prepayment medical plans, to maintain a standard, to develop rights of local committees and to make state plans as uniform as possible.

The Council on Medical Service and Public Relations approved the appointment of a director and the necessary staff to advise him and a proposed yearly expense of $50,000. There will be set up a department of prepayment medical insurance in connection with the council with a full-time or part-time director. He and his staff will establish new plans, strengthen ineffective plans and establish reciprocity of benefits in the various states.

The objective throughout in establishing this over-all national plan, said Dr. Adson, shall be not to work at the problem from above, but to start at the base and gradually work up. The answer to the nation's medical care problems, he said, shall be answered without getting the government to help us do it.

Doctor Wells Reviews Cancer Program

Establishment of cancer detection centers throughout the state was the ultimate goal of the proposals discussed for the group by Dr. Arthur H. Wells, pathologist at St. Luke's hospital in Duluth and chairman of the state cancer committee.

The centers described by Dr. Wells are to be free to all persons coming in for examination and staffed by physicians donating their services. Located in hospitals approved by the American College of Surgeons and set up with the approval and under the direct supervision of the various county medical societies, they will be financed by the American Cancer Society. They are a project of the Minnesota State Medical Association and are designed to detect abnormalities which do not produce symptoms sufficient to send the patient to a doctor.

The centers will not diagnose or treat diseases, but where cancer is suspected or indicated, patients will be advised to see their family physician.

At the outset, it is recommended that trial centers be set up in Minneapolis, St. Paul and Duluth; and as soon as it is practical and feasible, centers shall be extended to other communities at the initiation of the county medical societies.

Blood Plasma on Way to Physicians

Physicians in Minnesota will soon receive supplies of dried blood plasma from hospitals in their home communities, Dr. A. J. Chesley, executive secretary of the Minnesota State Board of Health, told the delegates. Donated by the American Red Cross from Army and Navy surpluses, the blood plasma will be supplied through some 193 general hospitals and to four tuberculosis sanatoria throughout the state. It is intended, Dr. Chesley stated, to be used only in cases of extreme emergency where definite need is indicated.

Dr. Paul F. Dwan reviewed for the assembly the medical and surgical conditions that influence a physician's choice of blood substitute. Acute hemmorhage, severe burns, chronic illness, such as cancer, and nutritional anemia were among the conditions that indicate a need for transfusion. Plasma, he said, should be used judiciously, where medically indicated, and where the benefits to be derived overbalance the risks inherent in the intravenous administration of any infusion fluid.

National Officers Speak at Dinner Meeting

After-dinner speakers were two officers in the American Medical Association, Dr. R. L. Sensenich, South Bend, Ind., chairman of the Board of Trustees, and Mr. Thomas A. Hendricks, of Chicago, acting secretary of the Council on Medical Service and Public Relations.

Speaking on the current problems facing medicine today, Dr. Sensenich declared: "A voluntary health insurance program, not a compulsory political program, is the cornerstone around which the budgeting of health costs must be built if the present American system of medicine is to remain unshackled by government bureaucracy."

He stressed the 10-point health program of the AMA and urged that responsibility for getting a fair standard of health should be placed with the individual as far as possible. Federal aid is desirable when needed and if a community is willing to share in the responsibility and the expense.

"Good deeds aren't talked about, bad deeds are," Mr. Hendricks pointed out in his discussion of public relations. Besides his simple definition that public relations is "conduct that should lead to public acceptance," Mr. Hendricks contended that public relations begin at home—that their goodness or badness is dependent on little things like the conduct of the doctor in the patient's home. Bad conduct on the part of as few as one per cent of the individuals in the medical profession or any profession can spoil the whole group effort.

Mr. Hendricks said that an active functioning county medical society can do much to establish good relations. Said he: "The County Society is the best thing American Medicine has." In conclusion, Mr. Hendricks described the responsibility which the County Medical Society today bears, citing the following paraphrase of a statement which Winston Churchill made in a secret report to the House of Commons in the darkest days of the war:

"Testing, trying, adverse, painful times lie ahead of us. We must all strive to do our duty to the utmost of our strength. As the war against regimentation and political medicine rises remorselessly to its climax the medical profession will have the opportunity once again of proving to the world that the firmness of spirit, sense of proportion, steadfastness of purpose which have gained it renown will once again be victorious over bureaucracy. In the final analysis, whatever is to be done must be done through the local societies—the strength, the fight, the fire, the know-how and the 'can do' are in the states and the local medical societies. With your help the job can be done, the job must be done, the job *will* be done!"

CHILD HEALTH SERVICES SURVEY PLANNED

At its morning session preceding the County Officers meeting, the Council approved a plan for conducting a survey of child health services throughout the state, a plan which is to be carried out in co-operation with the American Academy of Pediatrics of which Dr. Roger L. J. Kennedy of Rochester is state chairman. The plan, introduced by Dr. Kennedy, chairman of the state committee on child health, was formulated by the academy two years ago with the establishment of a committee on the study of child health services.

The Minnesota State Medical Association will sponsor the survey in the state to gather information from physicians, hospitals, health and welfare agencies and all other groups involved in health activities. Pediatricians of Minnesota have indicated their willingness to carry out assignments necessary to successful completion of the survey. It is planned that an executive secretary, preferably a physician, will be appointed to set up a central office from which all work on the survey in this state will be directed.

Dr. John Hubbard, who was on the Children's hospital staff in Boston before he entered the medical department of the army, has been appointed general national director with headquarters at the Children's hospital in Washington, D. C. A staff of experts is now at work under him formulating the questionnaires and manual that will be used. In order that the over-all picture will show uniformity, these will be identical in the various states. A pilot study in the state of North Carolina has been used as a guide for mapping future surveys. More detailed information on the survey is to be released as plans get under way.

USE OF MYRISTYL-GAMMA-PICOLINIUM CHLORIDE IN SURGERY

(Continued from Page 325)

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Minneapolis Surgical Society

Meeting Held December 6, 1945

The President, Robert F. McGandy, M.D., in the Chair

HERNIA IN SOLDIERS: DESCRIPTION OF A NEW INGUINAL OPERATIVE METHOD

HAMLIN MATTSON, M.D., M.S. (Surg.)
Minneapolis, Minnesota

It is an understatement to say that it is a pleasure to return home following service with the armed forces. During most of my service I worked with the Wakeman Hospital Center and related projects for the care of combat wounded. Established before the Normandy invasion, it grew to a bed capacity of 8,000 and was the largest of its type in the army. Many if not most of the patients came by air from the European and Pacific theaters. Eighty per cent of the beds were surgical. As assistant chief of the surgical service my duties consisted in assuming responsibility for the surgery in five of the eight sections of the surgical service.

Such duties permitted among other things the pursurance of an interest of many years in the problem of hernia. The types of inguinal hernia seen were influenced, of course, by the average age of the patients, the screening of induction examinations and the increased muscular development of the soldier.

Final statistical figures for World War II regarding the incidence of hernia at screening examinations are not available as yet. In 1942, 19,923 medical records were selected as representative samples from various states;[17] 64.6 hernial defects were found for each 1,000 men examined. Of 3,000,000 registrants examined from November, 1940, through September, 1941, 43.8 per cent were rejected at local boards and 9 per cent more at induction centers, making a total of 52.8 per cent. In November, 1943, men with hernia which had not descended into the scrotum were accepted. As of May 1, 1944, 4,049,000 of 13,000,000 registrants had been rejected.[18] Of this number, 229,000 or 5.7 per cent were rejected with hernia as the principal cause. Hernia was given as eighth in frequency as a principal cause of rejection.

Increased development of the internal oblique muscle and greater fascial endowments were noticeable during herniorrhaphies on soldiers as compared with the usual run seen in civilian practice. Any doubting Thomas who thinks the internal oblique sphincter action on the internal ring is more theoretical than real, need but put his finger in the neck of an indirect sac when a bulging muscled soldier is recovered partially from anesthesia to be convinced that the internal oblique really does exert a definite and sometimes very strong sphincter action on the internal ring.

Early in the war major surgery was distributed among various installations in the zone of the interior, but later only general hospitals could perform major operations except in emergencies. Hernia repairs naturally were put to unusual stresses and strains by muscular individuals in the exigencies of war. There seemed to be many recurrences. It was while working with direct inguinal recurrences which previously had fascia transplants that I became interested in seeking a better principle of surgical treatment.

There are variations seemingly without end but methods currently in use for the repair of direct inguinal hernia are essentially modifications of a technique described fifty-five years ago by Eduard Bassini[3], a then obscure surgeon at Padua in the swamps behind Venice. The inguinal strata were sutured to their inguinal ligament. Bassini rescued hernia surgery of his day from despair.

Despite improvements in technique in fifty-five years, recurrence rates for direct and recurrent inguinal hernia remain high in the United States. In a recent collection of end-result studies covering a period of ten years, recurrence rates for direct inguinal hernia varied from 2.7 to 33.3 per cent with an average of 15 to 20 per cent.[20] In 1934, Andrews and Bissel[1] reported a recurrence rate of 27 per cent and advocated abandonment of operation for direct inguinal hernia except for pain. Though final figures are not available, it seemed that recurrence rates in the armed services at least were not below those in civilian life. In 1944, admissions to the navy sick list for hernia numbered 16,386[7]; 1,114 were admitted because of recurrent hernia of which 484 were incurred prior to induction.

If it were possible to cover Hesselbach's triangle from the pubic spine with a layer of thick aponeurosis and anchor it to a solid structure by sewing clean fascia to clean fascia, better results should be possible generally. In the fall of 1943, on soldiers from the California desert training center, I began to turn back a flap of rectus to the superior pubic ligament for a distance of 5 centimeters out on that ligament, anchoring the rectus flap with interrupted silk sutures. The inguinal ligament was ignored. To be certain that an indirect sac was not overlooked, the cremaster envelope was opened in each case. If it is looked for, a projecting tongue of peritoneum can be found nearly always at the internal ring. Whenever necessary the transversalis fascia was sewed with interrupted silk around the actual structures of the cord.[13]

Much surgical and anatomical water has gone over the dam since Bassini's day, and the inguinal structures have been restudied with greater care. Recently the very basis of the Bassini operation has been challenged openly. After a dissection of 300 inguinal regions with the thought of continuity of aponeurosis and fascia in mind, McVay, in 1939[14], described the inguinal ligament as essentially a guy-rope. "The inguinal ligament," he writes, "is not the site of insertion of either the transversus abdominis or internal oblique muscles, nor is it anchored securely enough to its fascial surroundings to serve as a substitute for this insertion." He states that "pure fascia does not have the strength necessary to repair a muscule-aponeurotic defect such as occurs in direct inguinal hernias." He found that "the lowermost fibers of the internal oblique and transversus abdominis muscles do not attach to the inguinal ligament but insert into the fibrous covering of the pubic pecten, the ligamentum pubicum superius (ligament of Cooper)." According to his findings, the conjoined tendon usually is an artifact of dissection. In 7 per cent of dissections, he found the lower transversus abdominis deficient. This year Brandon[5], commenting in the British journal, *Lancet,* on the "house Bassini built" states that if a house persists in falling down in spite of having immensely strong walls, it can only mean that no one has examined the foundations with sufficient care.

Superior Pubic Ligament

Sir Astley Cooper described the superior pubic ligament (BNA) in 1804. He is reported to have advised its use in inguinal hernia operations. Anatomists and surgeons have paid little attention to it through the years. The twenty-fourth edition of Gray's Anatomy[9], published in 1942, gives it just four lines of fine print. It is a strong fibrous band extending lateralward from the base of the lacunar ligament along the pectineal line of the superior pubic ramus, to which it is attached firmly. It is strengthened by the pectineal fascia and by a lateral expansion of the lower attachment of the linea alba called the adminiculum linea alba. Lotheissen[12] reported using it in inguinal and femoral hernia in 1898. He encountered a forty-five-year-old woman who had been operated on twice before by the Bassini method. In May, 1897, he found the inguinal ligament destroyed and resorted to the use of Cooper's ligament. He quoted Narath of Utrecht as having performed the same procedure under similar circumstances. Subsequently, this method has been used in Europe and America. Babcock[2] sutured the uncut rectus sheath to the dense fibrous covering of the pubic pecten in 1927. Dickson[6] suggested ignoring the inguinal ligament entirely in 1936. Recently at Henry Ford Hospital in Detroit, practically all inguinal hernia operations have been done by the superior pubic ligament technique.[11]

In November, 1943, I applied the method used by Harkins. To relieve tension on the suture line I made a linear incision in the rectus sheath as he did. Because of dissatisfaction with the relaxation thus produced and the inadequacy of the transversus abdominis in certain cases, I turned down a flap of rectus and pyramidalis sheath, a method which had been applied to the inguinal ligament.

The Rectus Sheath

Bassini is said to have used the rectus sheath often in closures. In 1892, Wolfler[21] cut the rectus sheath and used it in hernia repair. Slajmer (1898) reported on 150 cases using Wolfler's method.[19] His drawing shows an incomplete rectus flap sewed to the middle third of the inguinal ligament. The flap was not cut down to the pubis. Berger[4] (1902) and Halstead[10] (1903) turned down full flaps of rectus fascia in inguinal hernia repair. In 1941, Estes[8] reported 2.77 per cent recurrences in 72 cases of direct inguinal hernia in which he used the rectus flap inguinal ligament method.

The so-called conjoined tendon often is a very flimsy structure. McVay found it usually was an artifact of dissection. In 1940, Riehoff[16] dissected 200 cadavers and found difficulty in demonstrating a conjoined tendon.

Description of Method

The incision ordinarily used for hernioplasty is placed a centimeter superiorly and a centimeter medially to the site usually used. The aponeurosis of the external oblique is split over the cord and the cord and cremaster envelope separated from its bed and the superior ramus of the pubis palpated.

The cremaster envelope is opened at the internal ring and the actual structures of the cord isolated. A peritoneal pouch has been looked for and found in each case. The pouch is opened, a finger inserted into the peritoneal cavity, the strength and redundancy of the floor of Hesselbach's triangle evaluated and it is decided then and there as to whether or not it needs re-enforcement. The transversalis fascia is sutured around the actual structures of the cord as a collar and the cremaster envelope closed. The direct sac is disposed of.

The superior pubic ligament is exposed by blunt dissection beginning at the spine of the pubis. The left index finger is used against the femoral vessels as a retractor. After about 6 centimeters of the ligament have been exposed, a boomerang-shaped flap is cut from the anterior sheaths of the rectus and pyramidalis muscles. Fine interrupted silk sutures are placed. Then the upper portion of the rectus sheath flap and available fascia is sutured up to the cord.

Indications

The method described above seems indicated in (1) direct inguinal hernias; (2) indirect inguinal hernias where the fascia of Hesselbach's triangle as shown by the palpating finger within the abdominal cavity is weak or redundant; (3) recurrent inguinal hernias and (4) femoral hernias.

Discussion

The above can be only in the nature of a preliminary report. I have operated upon thirty-five patients in military service since July 1, 1944, employing the above principles. It is my opinion that the operation is sound in principle and gives promise to lower recurrence rates in its field. It is well known that the most vulnerable area for recurrence in direct hernia is the lower angle where in the Bassini operation, two more or less fixed structures are sewed together. This cannot be done without tension as emphasized by Stein and Casten.[20] As pointed out by McVay[14], the transversalis in this angle sometimes is developed poorly. Rectus aponeurosis meets this deficiency and in this respect seems to be an improvement over procedures involving the superior pubic ligament described heretofore.

Postoperatively the examiner gets little or no impulse against the examining finger on cough when the finger is introduced into the internal ring.

The advantage of the procedure in recurrent hernia is that previously worked over scar-laden tissues are avoided and the operation is carried out in a virgin field largely. Recurrence rates should therefore approximate those of the primary operation.

The suture of the transversalis fascia as a collar around the actual structures of the cord gives the advantage which Halstead obtained by removing the cremaster entirely and approaches the insurance against recurrence of removal of the cord and testicle.

The sphincter action of the internal oblique at the internal ring is not disturbed.

Operating on both sides at the same sitting by one of the Bassini or previously performed Cooper's ligament methods, increases definitely the tension at the main suture line. This can be demonstrated readily in the cadaver. Such an objection does not apply to the method just described by me.

Superior pubic ligament procedures safeguard against overlooking an occult femoral hernia, and if a femoral hernia is encountered, the operation above described takes care of it more adequately than any of which I know. It may be said about the general uses of this operation that, in fact, you are damming the waters upstream where the gorge is narrowest with strong aponeurosis rather than below in the broader plain, where the structures part at the seams.

Summary

A method of hernioplasty is described wherein a flap of anterior rectus and pyramidalis sheath is turned down and sutured to the superior pubic ligament. Such a procedure is believed indicated in (1) direct inguinal hernias; (2) indirect inguinal hernias with weak and redundant fascia in Hesselbach's triangle; (3) recurrent direct inguinal hernias operated on previously by other methods; and (4) femoral hernias.

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Discussion

Dr. Ivar Sivertsen: It has been my pleasure to have the privilege of seeing Doctor Mattson do this work. In fact, I have had him take care of a couple of cases of inguinal hernia as well as one case of femoral hernia by this method.

I think the principle Doctor Mattson has in mind is excellent and his results should be perfect. There is one thing that I feel is necessary in this procedure and that is that the surgeon must know his anatomy. He must recognize the large vessels present and when he applies his sutures he must be sure that he does not injure the femoral vessel, and in this way produce a thrombosis.

The drawing of the flap down to the pectineal line where the ligament is attached, and this part of the rectus muscle brought into position certainly gives excellent support to the deeper structures.

The three cases which were done by Doctor Mattson for me have had excellent results. No impulse is noted when the finger is placed in the external ring.

I congratulate Doctor Mattson on this fine piece of work, and thank him for bringing this matter to the attention of the society.

Dr. Kenneth Bulkley: Doctor Mattson has presented us with a most excellent paper on the subject of hernias, with particular reference to the adequate closure of direct inguinal hernias. Satisfactory permanent closure of these direct hernias is not, as you all know, always easy. We have, all of us, too often in the past seen such hernias, which we closed merely by suturing the edge of the rectus sheath to Poupart's ligament, recur. With this procedure the tension is too great. Doctor Mattson has presented a method of closure by means of turning back a trap door from the anterior rectus sheath, this procedure relieving tension.

There is a further suggestion or two which I would like to make. In the third slide, which he showed tonight, you will note that he has made his trap door in a semi-circular manner. If this flap is made in a rectangular shape, carrying the far side of the rectus flap to the midline, as advocated many years ago by the late Dr. Joseph A. Blake, it will be found that the tension is still less, and that a broader edge is thus obtained for suture to Poupart's ligament. Furthermore, when this suture is completed, and the so-called conjoined tendon and the aponeurosis of the external oblique also sutured beneath the cord, leaving the cord subcutaneous, a firmer and more solid closure will be obtained. I feel this closure is more solid than that obtained by the Gallie procedure. Patients occasionally complain of discomfort in the cord following such subcutaneous transplantation, but such is always only temporary. Incidentally, I might add that I prefer sharp rather than blunt gauze dissection in these procedures.

Dr. Clarence Dennis: I would like to ask one question. There has been some mention by various members of the Society recently of dissecting all the structures of the cord except the vas and the vessels. I am curious to know if most of you gentlemen employ this technique or not. It does seem that it should lower the recurrence rate, although there is probably an increased reason for atrophy of the testicle. In regard to this very excellent paper by Doctor Mattson, in the past two years, we have been teaching our students at the University the McVay-Harkins procedure. It seems to us that this is the most adequate of all the hernioplasty procedures which have been devised. This procedure suggested by Doctor Mattson, however, seems to be workable in conjunction with the McVay-Harkins.

After listening to this paper, I for one plan to try Doctor Mattson's procedure simply to see how it works. This has been a most illuminating paper.

Dr. Mattson: The question was asked as to whether the transversalis could be sutured as a cone cuff pointing intra-abdominally about the actual structures of the cord. I should think that would be difficult, but perhaps possible. I have not tried it. The transversalis fascia is a thin layer and seems to just come together around the actual structures of the cord, within the cremaster envelope.

In Babcock's operation the edge of the rectus sheath is sutured to the lower portion of Cooper's ligament. In the operation which I have described, the turned-back flap of rectus sheath is sutured out almost 5 centimeters from the spine of the pubis.

I appreciate Doctor Bulkley's remarks on sharp dissection. I was brought up on sharp dissection but believe there are a number of instances in surgery when blunt dissection with gauze is called for. One of these, in my opinion, is the exposure of the superior pubic ligament where the areolar tissue can be wiped away and injury to vessels guarded against. Most of the exposure must be by blunt dissection. Gauze dissection is the method used quite generally in exposing Cooper's ligament in the country at large, according to the literature.

The anterior rectus sheath is exposed and taken medially as far as the attachment of the external oblique will permit. Hence, in the procedure I have described, as wide a flap as possible is taken consistent with leaving the external oblique intact.

May I say a word about early rising. The rectus sheath, superior pubic ligament procedure using interrupted silk seems to lend itself well to early rising. Before early rising was interdicted by the surgeon general, I got some of those patients up on the third and fourth day.

As Doctor Sivertsen has indicated, injury to the femoral and deep eipgastric vessels must be guarded against. The index finger serves as a retractor and guards the femoral vessels, and I have found it safest to isolate the epigastric vessls much as a nerve is isolated to keep it out of harms way.

ACUTE ACROMIO-CLAVICULAR JOINT DISLOCATION

Internal Fixation of the Clavicle and Coracoid Process of the Scapula with a Vitallium Screw

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This condition, as the name implies, is a dislocation of the outer end of the clavicle from the acromion of the scapula.

Function of the Acromio-Clavicular Joint

When the shoulder is projected backward, the acromion slides very little because the capsule and the acromio-clavicular ligament are immediately placed under tension, and the joint has a tendency to open. The clavicle follows to a certain extent this backward movement, but is stopped by the tension of the trapezoid ligament. Exactly the opposite occurs when the shoulder is forced forward. As the acromion slides, the acromio-clavicular joint has a tendency to close and the conoid ligament under tension stops the forward movement of the clavicle. When the shoulder is forced upward with the arm in full extension, the conoid ligament is the first to resist.

Anatomy

The integrity of the acromio-clavicular joint is maintained principally by the two powerful coraco-clavicular ligaments, the conoid and trapezoid, and to a lesser extent by the acromio-clavicular ligament. The acromio-clavicular joint is the only union between the scapula and the clavicle and is a very important connecting link between the trunk and the upper extremity. This joint has an intra-articular meniscus and a capsule that is reinforced on its superior aspect by the acromio-clavicular ligament. The fact that its main elements of fixation are quite far away from their articular surfaces, gives it a peculiar feature.

Classification

Acromio-clavicular joint dislocations may be classified into two types: (1) incomplete; (2) complete. In a review of the literature some authors, in using such terms as luxation or subluxation of the acromio-clavicular joint, have not made it clear as to whether they were treating a complete or incomplete separation at the acromio-clavicular joint. This should be made clear because the satisfactory conservative treatment for an incomplete dislocation will not cure a complete dislocation.

Clinical Anatomy

As a means for heavy weight traction and pushing, the shoulder is admirably suited to its task, since it is well supported by strong muscles and allows movement in practically any direction. However, the stress produced by a sudden blow directed against the tip of the shoulder, or a fall on its outer end, will unduly tax the acromio-clavicular joint. Not infrequently there follows a varying degree of separation at the joint with stretching or tearing of the capsular and associated ligaments. Blows to the outer end of the acromion process are transmitted to the well-cushioned scapula directing it downward and inward. Because of the position of the first rib at the clavicular attachment to the sternum, the outer end of the clavicle is able to follow this downward and inward movement only a fixed distance. When the limit of movement is reached, either the clavicle fractures or one of its two ligaments must yield, providing the force exceeds the strength of the weakest link in the structure.

If only the acromio-clavicular ligament is torn, there will be little or no separation at the joint. Cases of this type are always cured by taping or strapping for a period of eight to ten days.

If the force producing the injury is great enough, the coraco-clavicular ligaments will be torn as well, resulting in wide or complete acromio-clavicular separation. In such cases, no amount of strapping or taping will cure the dislocation.

Complete Separation

Symptoms.—The degree of disability in complete acromio-clavicular joint dislocation should not be underestimated. The patient complains of instability of the shoulder joint and there is constant nagging pain. There is difficulty in abducting the arm beyond 90 degrees. The reason for the disability is explained by the fact that abduction to 90 degrees occurs in the glenoid fossa of the scapula. Abduction beyond 90 degrees brings into play the acromio-clavicular joint. With dislocation of this joint, the pain and difficulty in abducting the arm beyond 90 degrees can be readily understood.

Diagnosis.—Although a suggestive history and typical physical findings will establish the diagnosis in most cases, it is always advisable to examine the area by roentgen ray. A large film should be used so as to include both clavicles on the same film. In this manner, there is set up a normal study of the clavicle of the individual to be examined. The patient should be in a standing position with both arms hanging free and unsupported. It is well to keep in mind that most acromio-clavicular joint separations fall back into normal position when the patient is placed in the horizontal position and may give an erroneous x-ray study. This can be avoided if a pull is exerted on the arms at the time the x-ray is taken on patients who are bedridden.

Principles of Treatment.—Since good results are obtained by conservative methods in partial or incomplete separations, further discussion will be directed toward the acute complete acromio-clavicular joint dislocation. Regardless of the degree of dislocation, a reduction can usually be effected in fresh cases of elevating the shoulder upward and forcing the outer end of the clavicle downward, thus opposing the joint surfaces. Uninterrupted maintenance in this position for a period of several weeks will allow the ligaments to heal. Since the involved ligaments, like fibrous tissue elsewhere in the body, will heal if held in apposition, it is evident that the value of any treatment, whether conservative or surgical, lies in maintaining rather than obtaining reduction.

Various dressings have been devised to hold the shoulder and clavicle in the corrected position. The majority of these are based on the principle of support of the arm of the injured shoulder by means of adhesive, plaster, cloth, or a metal brace, so placed that the pull of gravity on the arm is counteracted by the compressing support of the dressing. Although theoretically sound and effective when secure, dressings of this type soon loosen and slip with respirations and body movements, thus allowing a return of the dislocation. It is this ineffectiveness which has resulted in the widespread abandonment of conservative treatment.

The first attempt at a surgical repair of acromio-clavicular dislocation was made in 1861 by Cooper. He wired the outer end of the clavicle to the acromion. Paci, in 1899, resected the ends of the dislocated bones and arthrodesed them. Budinger, in 1900, fastened the bones together with screws. Tuffier, in 1914, used silk; and Delbet, in 1916, fastened the bones with nails. Later he employed a bone graft. Cadenat, in 1917, attempted an anatomical repair of all the torn ligaments with silk; while Bunnell, in 1928, comprehensively described the operation used today employing fascia lata. Although Bunnell is considered the pioneer in the fascial repair of acromio-clavicular dislocation, credit must be given to Henry who performed this operation as early as 1924. Watkins, in 1925, reported his work. In place of fascia, he repaired the coraco-clavicular ligament by means of a silk ligature passed around the clavicle and the coracoid process of the scapula. However, his operation was not only an extensive one, but in the hands of many surgeons failed to give satisfactory results. Two years previous, Hart reported his method of applying a plaster-of-Paris shoulder spica cast with the arm abducted at a 45-degree angle. After four weeks he removed the top shell of the cast for the purpose of allowing motion. He figured six to eight weeks as the healing period.

Within the last few years there has been a growing tendency to abandon the radical surgical repair of the coraco-clavicular ligament in favor of simpler procedures. In 1940, Murray reported his method of passing one or two Kirschner wires through the acromion process across the acromio-clavicular joint into the outer third of the clavicle. Although he reports five cases, all successful, some of the photographs in his article showing the wire in place, also show that the dislocation is not completely reduced. In most of his cases, he eventually removed the wires. Since they pass through some of the deltoid muscle fibers they cause pain on abduction at the shoulder joint. Phemister, two years later, reported his method of passing two fairly heavy threaded steel wires through the acromion process into the distal third of the clavicle. He kept the arm in a Velpeau bandage for one month and after two months removed the wires and allowed free use of the arm. Although it is a simple procedure to pass one or two wires across the acromion process of the scapula into the distal third of the clavicle, this is the only surgical procedure that has developed a serious complication.

(Continued on Page 360)

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(Continued from Page 358)

In 1942 Mazet reported two cases where the wires had migrated into the pleural cavity.

In 1941 Bosworth reported four cases wherein he ran a vitallium screw through the outer end of the clavicle into the coracoid process of the scapula. I used this technique in nine patients operated upon in the Minneapolis General Hospital in 1942 to 1944.

Technique of the Operation

The patient is placed on the operating table with the back elevated about 35 degrees. After the skin is properly prepared and sterile drapes applied, the remaining portion of the operation is performed under local anesthesia. A three-inch skin incision is made over the tip of the shoulder. The incision begins two inches from the distal end and near the posterior border of the clavicle, then is curved to run anteriorly one inch further over the acromio-clavicular joint. The distal end of the clavicle and the acromio-clavicular joint are exposed by splitting the deltoid muscle fibers that run parallel over the lateral tip of the clavicle. At this stage of the operation, local anesthetic is infiltrated into the region of the acromio-clavicular joint so as to abolish pain when reduction of the dislocation is attempted. Reduction of the dislocation is a simple procedure. The distal end of the clavicle is forced downward while at the same time the shoulder is elevated upward. If the acromio-clavicular joint is sufficiently exposed surgically, one can be certain of a complete reduction. Occasionally, the articular surface of the acromion lies anteriorly or posteriorly to the distal end of the clavicle after the downward separation has been reduced. This can be corrected under vision merely by forcing the acromion backward if there is an anterior dislocation or forward if there is a posterior dislocation. With the reduction of the dislocation maintained, a hole is drilled through the clavicle. The drill hole should be slightly larger than the diameter of the screw and should be placed 1 to 1.5 inches from the distal end of the clavicle. The proper site can be determined as follows: A long needle attached to a syringe of 1 per cent novocain solution is inserted near the anterior surface of the clavicle in line with the tip of the coracoid process. The needle is directed downward and obliquely posteriorly. The medial border of the coracoid can be palpated with the needle and the drill hole placed 0.25 of an inch lateral to the needle. If novocain solution is injected with the progress of the needle, the procedure is painless. After the hole is drilled through the clavicle, 1 per cent novocain solution is injected through the drill hole around the coracoid process. Entering the drill hole in the clavicle, a small drill hole is then made into the outer cortex of the coracoid process. A small washer is placed over the drill hole in the clavicle and a partially threaded vitallium screw 1.5 to 1.75 inch in length is inserted through the clavicle into the base of the coracoid process. The screw should be firmly tightened since there is no danger of overcorrection. The incision is closed with non-absorbable skin sutures or metal clips, and protected with a small sterile dressing. The patient is advised to refrain from abducting the arm beyond 90 degrees and not to use the arm for lifting or pulling while the screw is in place. The screw should be removed in six to eight weeks.

I have been questioned regarding the danger of the screw injuring the axillary artery or vein when inserted into this particular site in the body. Bosworth answered this question. He made a frontal section through a frozen cadaver and found that the axillary artery and vein lie well anterior and out of danger from injury by the screw. If too long a screw is used, the point of the screw merely imbeds itself in the subscapularis muscle and apparently causes no difficulty.

Conclusions

1. Nine patients with acute complete acromio-clavicular joint dislocation have been operated upon showing that it is possible to insert a screw through the distal end of the clavicle into the coracoid process of the scapula which will maintain continuous reduction of the dislocation.

2. It is essential that the patient refrain from heavy weight traction on the arm and refrain from abducting the shoulder beyond a 90-degree angle; otherwise the screw will tear out or break.

3. After a period of six to eight weeks the screw should be removed and the patient then is allowed free use of the arm and shoulder.

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(Continued on Page 372)

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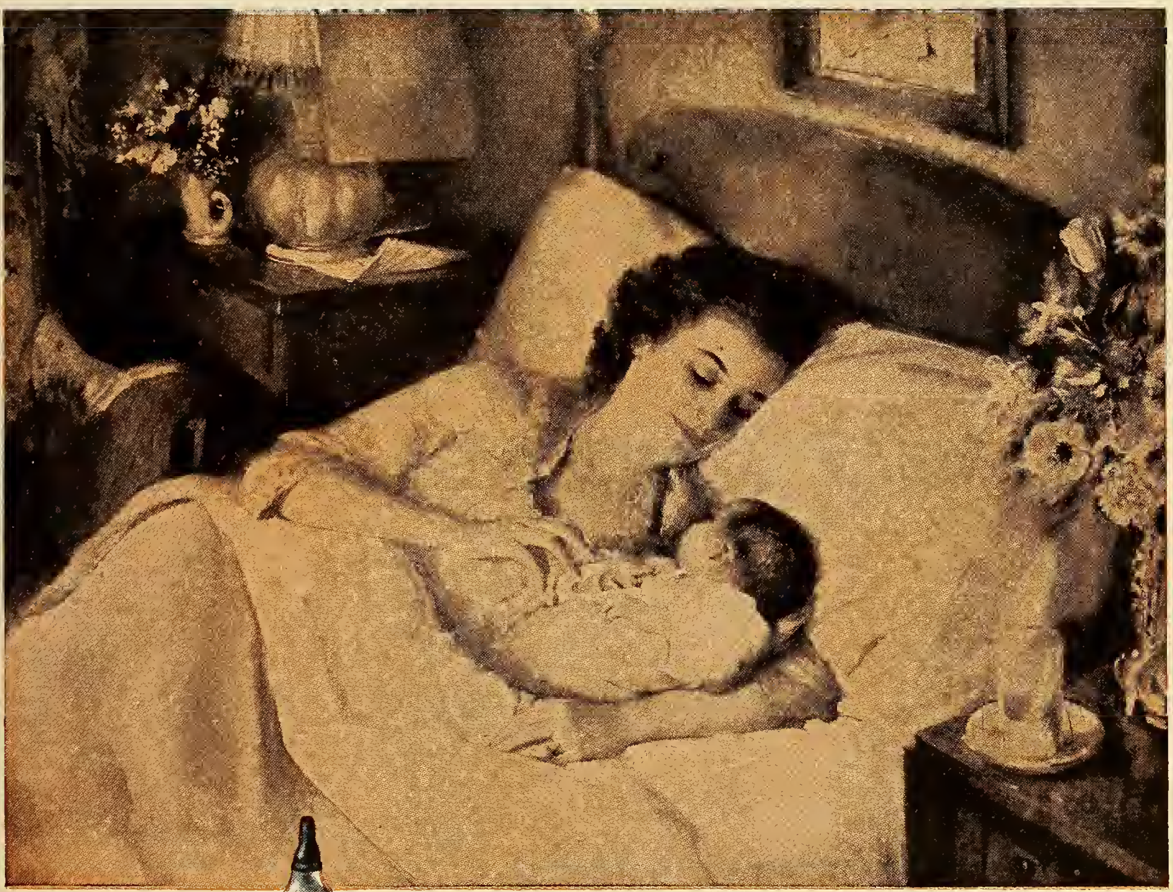

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Reports and Announcements

MEDICAL BROADCAST FOR APRIL

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

April		
3—11:00	KUOM	You May Have to Know First Aid
4— 5:15	WCCO	Cancer Research
6—11:30	KUOM-KROC-KFAM	Medicine in the News
10—11:00	KUOM	The Accident Toll Can Be Reduced
11— 5:15	WCCO	Cancer Education
13—11:30	KUOM-KROC-KFAM	Medicine in the News
17—11:00	KUOM	You Are Not Even Safe in Your Own Home
18— 5:15	WCCO	Cancer Service
20—11:30	KUOM-KROC-KFAM	Medicine in the News
24—11:00	KUOM	School and Work Also Present Dangers
25— 5:15	WCCO	Oral Cancer
27—11:30	KUOM	Medicine in the News
30— 5:15	WCCO	Your Community Hospital

U. S. PUBLIC HEALTH SERVICE

Examinations for appointments of medical officers in the Regular Corps of the United States Public Health Service will be held at various convenient localities throughout the country. Examinations are for appointments to fill vacancies of Assistant Surgeon (First Lieutenant) and Senior Assistant Surgeon (Captain).

Regular Corps appointments are permanent. They provide qualified doctors with opportunities for a career in one or more of a number of fields including research, general hospitals, special hospitals, foreign duty, and public health programs.

Entrance pay for Assistant Surgeon with dependents is $3,411 a year, and for Senior Assistant Suregon with dependents is $3,991 a year. Promotions are at regular intervals up to and including the grade of Medical Director which corresponds to full Colonel at $7,951 a year. Retirement pay at sixty-four is $4,500 a year. Full medical care including disability retirement at three-fourths pay is provided. All expenses of official travel are paid by the Government. Thirty days' annual leave with pay is provided.

Applicants for the grade of Assistant Surgeon must be citizens of the United States, must present diploma of graduation from recognized medical school, must have had or be in the process of completing the seventh year of college or professional training or experience since high school graduation (two years premedical, four years of medicine, one year internship), and must have a physical examination at the place of oral examination by medical officers of the Service. Applicants for the grade of Senior Assistant Surgeon must meet the above requirements and must have had four additional years of postgraduate training or experience.

Examinations will be oral and written. The written examination will be held on May 14, 15 and 16 at places convenient to the candidate and the Service. National Board grades may be used for the Assistant Surgeon examination. An oral examination will be held at 9 a.m. at the Office of Indian Affairs, 218 Federal Office Bldg., Minneapolis, Minn., April 29, 1946.

Application forms may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

ILLINOIS OTOLARYNGOLOGY REFRESHER COURSE

A one-week didactic and clinical refresher course in Otolaryngology has been arranged for specialists in the field, from May 13 to 18, 1946, inclusive. Applications for registration should include school of graduation, training and experience. Check for tuition ($50.00) should accompany the application.

In addition, a special course in Broncho-Esophagology will be given from June 3 to 15, 1946, inclusive. It will consist of lectures, animal and cadaver demonstrations, diagnostic and surgical clinics.

The course will be under the direction of Dr. Paul H. Holinger and Dr. Albert H. Andrews, Jr.

Tuition for this course is $100.00. Check should accompany application. Class limited to twelve physicians.

Further information may be obtained by writing to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago, Illinois.

ATTENTION WOMEN DOCTORS!

On Monday, May 20, a 12:15 luncheon for women doctors attending the annual meeting of the Minnesota State Medical Association will be served in a private room at the YWCA situated across the street from the Auditorium. The price is $1.00.

Dinner will be served Monday evening at the Women's City Club, 305 St. Peter. Tickets are $1.50.

Please make reservations early through Dr. Nellie N. Barsness, 540 Lowry Medical Arts Building, Saint Paul 2, Minnesota.

E. STARR JUDD LECTURE

The thirteenth E. Starr Judd lecture will be given by Dr. Samuel C. Harvey, Wm. H. Carmalt Professor of Surgery at Yale University, Monday evening, April 15, 1946 at 8:15 in the Medical Science Amphitheatre. Subject is "The Healing of the Wound."

The late E. Starr Judd, an alumnus of the Medical School of the University of Minnesota, established this annual lectureship in Surgery a few years before his death.

(Continued on Page 366)

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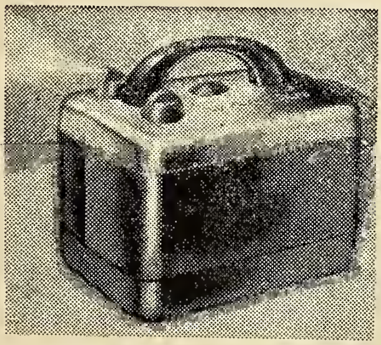

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(Continued from Page 364)

WASECA COUNTY SOCIETY

Dr. and Mrs. Homer M. McIntire entertained members of the Waseca County Medical Society and their wives at dinner at their home in Waseca on the occasion of the society's annual meeting. After dinner both the society and the auxiliary held their business meetings and elected the following officers: Dr. George H. Olds, of New Richland, was made president of the Medical Society and Dr. Siegfried Oeljen, secretary-treasurer. The auxiliary named Mrs. McIntire president, and Mrs. Olds as secretary-treasurer. Resolutions were passed asking adjustment of nurses' salaries to a fair comparison with those in similar institutions in the locality, and urging the hospital board to increase hospital capacity.

WASHINGTON COUNTY

The members of the Washington County Medical Society were addressed at their regular monthly meeting March 12, 1946, by Dr. Karl H. Pfuetze, Medical Director and Superintendent of the Mineral Springs Sanatorium. His subject was "Tuberculosis," and chest x-rays were presented. Dr. Pfuetze also spoke on the uses and effects of the newer drugs on this disease as well as the effect of the newest drugs, not yet available for the general practitioner.

SPRING CLINIC—CRIPPLED CHILDREN SERVICES

The Division of Social Welfare, Medical Services Unit, announces the Spring Clinic Schedule for Crippled Children Services as follows:

Location	Date	Counties	Building
St. Cloud	April 6	Stearns Benton Sherburne	Technical High School
Austin	April 13	Mower Freeborn Steele Dodge	Sumner School
Thief River Falls	April 27	Pennington Marshall Red Lake Roseau Kittson	High School
Wadena	May 4	Wadena Todd Hubbard	High School
Moose Lake	May 11	Aitkin Carlton Pine Mille Lacs Kanabec Lake Cook	High School
Worthington	May 18	Nobles Jackson Murray Rock Pipestone Cottonwood	Grade School
Grand Rapids	May 25	Itasca Koochiching Cass	Senior High School
Morris	June 1	Stevens Pope Douglas Grant Traverse Bigstone Swift	High School
Detroit Lakes	June 8	Becker Clay Mahnomen	High School

Registration Hours: 8:00 a.m. to 2:00 p.m.

NURSES' ASSOCIATION ANNOUNCES COUNSELING AND PLACEMENT SERVICE

The Minnesota Nurses' Association announces the establishment of a Professional Counseling and Placement Service with offices at 2642 University Avenue, Saint Paul 4, Minnesota. The purpose of this service, for which there is no fee to either employer or employe, is three-fold: to help place nurses and auxiliary workers in the geographic area and in the nursing service where there is the greatest need; to help nurses, auxiliary workers, and prospective nurses make the best adjustment to the profession by helping them solve their educational, vocational and personal problems; to provide a place for employers of nurses to report their nursing needs and to get help in filling the vacancies in their nursing staffs.

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'Tis said 'twill help cure all your ills;
(Such talk is just a jingle.)

These are the facts that you should know
No matter what your station:
The Surgeon General plans to rule
The health of all the nation.

Sixteen he picks to counsel him
From lists of every kind.
They'll counsel him, but in the end
He'll make up his own mind.

The Council makes reports, that's all.
For this they get good pay.
An awful waste of tax funds, this,
At twenty-five a day.

Your tax for this is four per cent;
Employers pay the same.
And if you're working for yourself,
Your tax is more!—Some game!

Three billion bucks a year that makes
That for the Surgeon General's slated.
If doctors don't do what he says
They're excommunicated!

You can't select a doctor or
A dentist or a nurse,
Unless the Surgeon General
Has picked them for you first.

Why change to socialism now?
As this bill would, no doubt.
Is this America or not?
It's time that we found out.

—By Sue Dickey Hough
Former member, Minnesota State Legislature

The first wealth is health. Sickness is poor-spirited, and cannot serve anyone; it must husband its resources to live. But health answers its own ends, and has to spare; runs over, and inundates the neighborhoods and crooks of other men's necessities.—Ralph Waldo Emerson.

YOU CAN'T OVERRATE THE VALUE OF CONTROL

Everyone can see the need for control measures against *obvious* dangers. But dramatic and constant campaigning is necessary to win public support in the fight against the unseen menace of cancer. Interest must be awakened and education conducted to enlist the public co-operation requisite to success. This challenging work is the responsibility of the Field Army of the American Cancer Society.

To give appropriate significance to these efforts and to focus nation-wide attention on this vital problem, Congress has designated April, "Cancer Control Month." And again this Spring, as in each drive spearheading the next year's activities, the Field Army's straightforward appeal to all Americans is: "GIVE, to Conquer Cancer."

Once more, over 10,000 Rexall Drug Stores across the country unite in behalf of this cause. Urging Americans to heed the Society's plea, these stores contribute facilities for distribution of literature cautioning "Consult your doctor" at the first moment of cancer's "danger signals."

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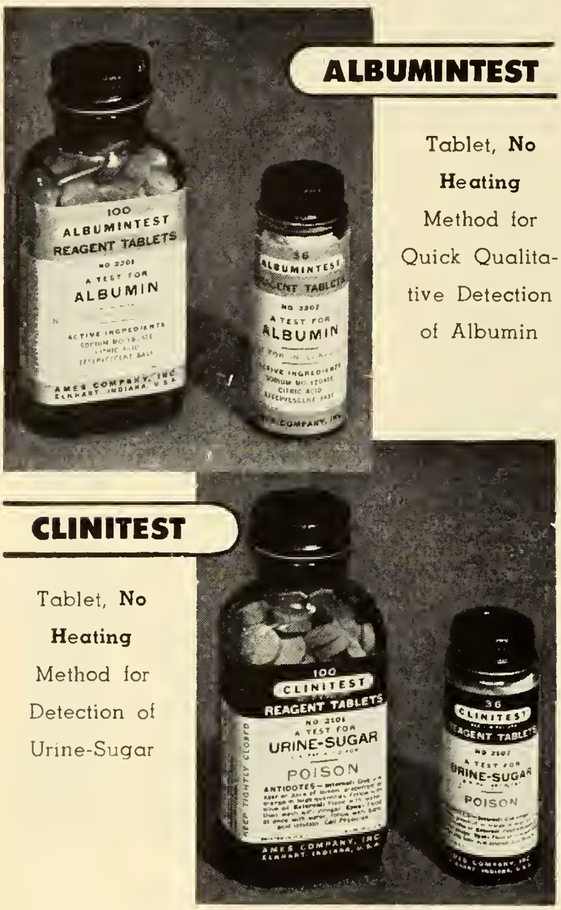

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Blue Earth County

Dr. Haddow M. Keith, Section on Pediatrics of the Mayo Clinic, addressed the Blue Earth and Nicollet-Le Sueur County Auxiliaries on February 18 at the Lincoln School auditorium. His subject was "Mental Hygiene," with reference to child health. The meeting was open to the public.

Two members of the auxiliary, Mrs. A. F. Kemp of Mankato, Chairman of the Society for the Control of Cancer, and Mrs. J. C. Vezina of Mapleton attended the three-day Cancer School at the University of Minnesota.

Goodhue County

Mrs. F. R. Hedine and Mrs. R. V. Sherman, both of Red Wing, are on the local committee of the Minnesota Association for Crippled Children and Adults. All of the members of Goodhue County Auxiliary are participating in the annual cancer control drive. The Auxiliary is making plans for an April luncheon to welcome three new members: Mrs. Grant Hartvagel, who has returned to Red Wing with Dr. Hartvagel, recently discharged from the service; Mrs. James Weir of Goodhue, and Mrs. Ralph Larson of Cannon Falls.

Kandiyohi-Swift-Meeker Counties

Mrs. Hans Johnson of Kerkoven was hostess to the Auxiliary of which she is president at Willmar, Minnesota, on January 13.

St. Louis County

Mrs. L. E. Schneider of Duluth, a member of the Auxiliary, gave an enlightening and stimualting review of *Where People Take Their Troubles* by Lee Steiner at the monthly luncheon meeting of the Auxiliary in the Holland Hotel, Tally Ho room, on February 12.

Mrs. G. Arvid Hedberg, president of the Auxiliary, gave a résumé of Dr. Weaver's talk at the State Board meeting.

Mrs. M. A. Nickolson, chairman of the Philanthropic Committee, reported the gift of a card table and four chairs to the Nopeming Sanatorium, one room of which has been a project of the Auxiliary.

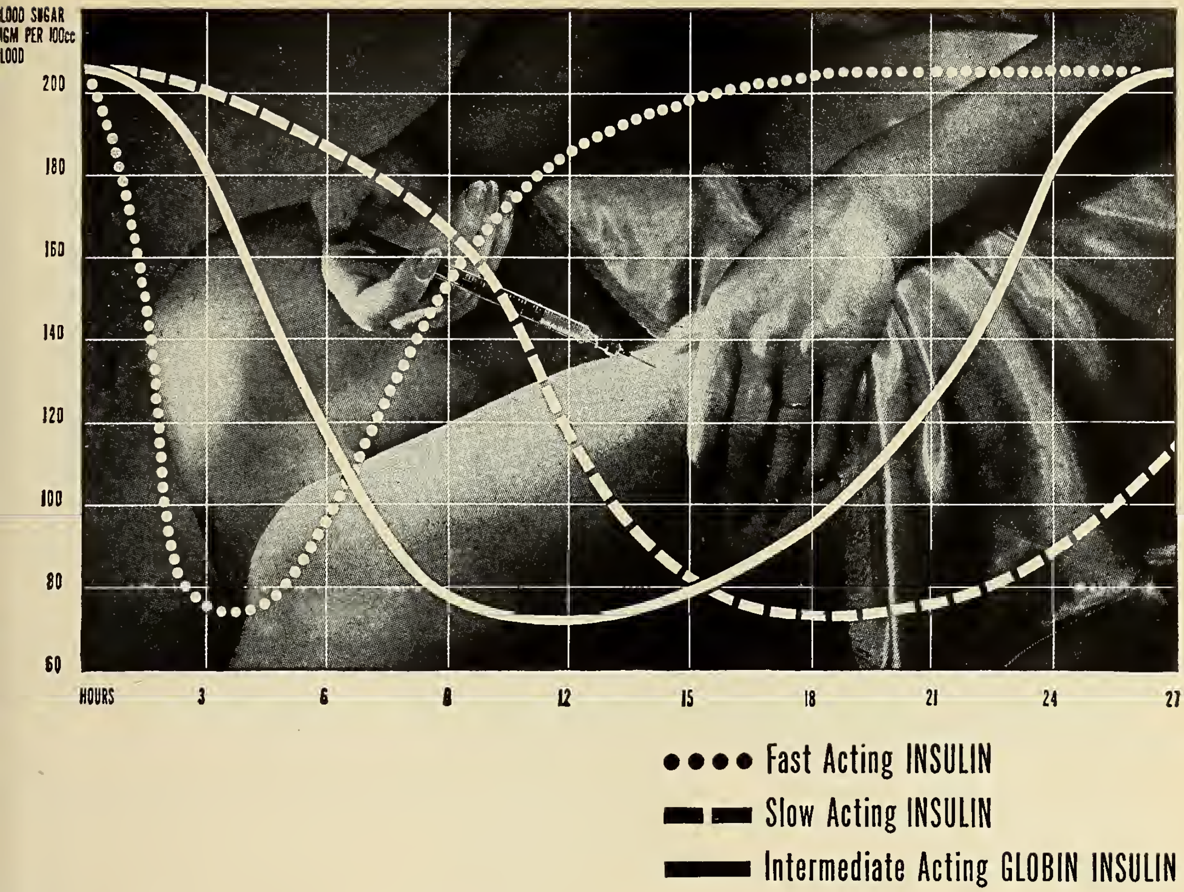
Mrs. Robert S. Forbes has been honored for the excellent work she has done with the Red Cross.

These days each meeting carries with it the excitement of welcoming back those members who have been away so long while their husbands were in the service.

Stearns-Benton Counties

Mrs. R. N. Jones, St. Cloud, was hostess to her Auxiliary on February 12. She gave a report of the State Board meeting held at the Radisson Hotel, January 26. Mrs. J. C. Buscher, representing the Auxiliary, attended the School for Cancer Control at the Continuation Center.

(Continued on Page 372)



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STEARNS-BENTON COUNTIES

(Continued from Page 370)

Dr. and Mrs. J. B. Gaida of St. Cloud announce the birth of a son, Joseph Aubin, at St. Cloud Hospital. Mrs. Gaida is president of the Auxiliary.

Upper Mississippi

The Brainerd doctors and their wives entertained the Upper Mississippi Auxiliary and Medical Society at The Brainerd on February 9.

Washington County

Mrs. R. J. Josewski of Oak Park, Stillwater, was hostess for the Auxiliary on February 12. Nine members were present.

MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 360)

Discussion

DR. EARL HENRIKSON: I would like to ask one question. You mentioned one screw that broke. Have you had any others break? These screws are not very strong. There is a lot of tension on them in muscular people. I have seen two that broke and I wonder if you know about what per cent do break.

DR. KENNETH JENSEN: I would like to ask, have you had any recurrences of the acromio-clavicular dislocations after the screw was removed in six to eight weeks?

DR. ROLLA STEWART: Regarding Doctor Henrikson's question: I do not know what percentage of the patients broke the screw. I tried to get all the patients back for follow-up x-rays but could locate only a few. I allowed these patients free use of the arm following surgery and discovered it was abducting the arm beyond 90° that broke the screw. Toward the latter part of this work, I advised the patients to refrain from abducting the arm beyond a 90° angle and to refrain from heavy lifting. The arm should be kept in a sling for about six to eight weeks and then the screw should be removed and free use of the arm allowed. Bosworth devised a larger screw, but this requires a drill hole through the clavicle about ¼ inch in diameter. Any screw similar to vitallium is large enough to hold, providing the patient uses the above precautions.

Regarding Doctor Jensen's question: I have not been able to follow that.

ERNEST R. ANDERSON, M.D.
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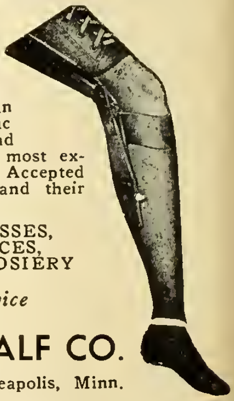

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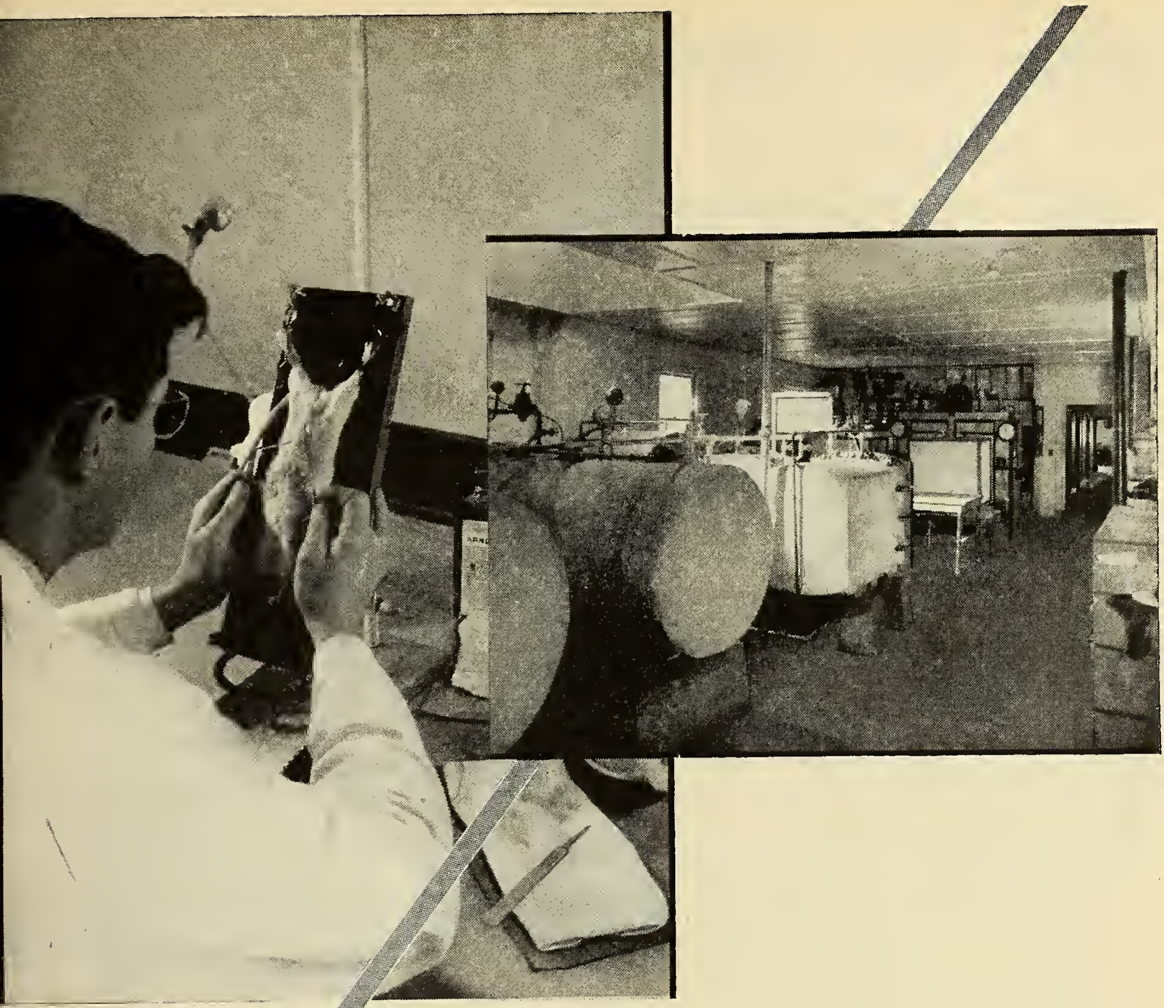

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In Memoriam

HERBERT BURR BAILEY

Dr. Herbert B. Bailey of Fairmont died on February 11, 1946, of coronary thrombosis.

He was born February 2, 1883, at Jackson, Minnesota. His grandfather, Major Hiram S. Bailey, was for a time during the Civil War the commanding officer at Fort Fairmont.

Dr. Bailey received his M.D. degree from the University of Minnesota in 1913, and served an internship in the Minneapolis General Hospital in 1913-14. In 1915 he located at Ceylon, Minnesota, where he had an extensive practice before moving to Fairmont in 1934. In 1937 he established his own private hospital, conducting it until war shortages forced its discontinuance.

He was a member of the Blue Earth Valley Medical Society, the Minnesota State and American Medical Associations. He was a member of the Methodist Church and an ardent Mason. He was fond of hunting, fishing and travel and was active in civic affairs.

In 1913 Dr. Bailey married Sena G. Husby, who survives. A son, Dr. Robert B. Bailey, recently returned from service in the Army. His daughter, Helen Jane (Mrs. John M. Sunderson), also survives.

RICHARD W. CRAGG

Dr. Richard W. Cragg, who was with the Mayo Foundation from 1932 until July 1, 1942, when he entered active service in the Navy, died of coronary occlusion February 18, 1946, at his home at Vallejo, California.

Born December 14, 1905, at Cincinnati, Dr. Cragg received the degree of B.S. in 1926 and of M.D. in 1931 from the University of Cincinnati.

He entered the Mayo Foundation as a Fellow, October 1, 1932, and became assistant professor of pathology of the Mayo Foundation in 1941.

In service, Lieutenant Commander Cragg was pathologist at the Naval Hospital at Corona, California. He was then assigned to duty at the Naval Advance Base Training Section at San Bruno, California, and was later made chief pathologist at the Naval Hospital at Mare Island. His entire service to the Navy was performed with outstanding ability and skill, and he gave unstintingly of his time to many civilian activities at Vallejo.

ROBERT S. FORBES

Dr. Robert S. Forbes of Duluth, Minnesota, passed away April 9, 1945, at the age of fifty-eight. He was born in Saint Paul, July 8, 1886, attended Central High School in Duluth, and, after taking two years of premedical work at the University of Minnesota, graduated from the medical school of the University of Pennsylvania in 1910. He interned at the St. Christopher and Presbyterian Hospitals, Philadelphia, from 1910 until

(Continued on Page 376)

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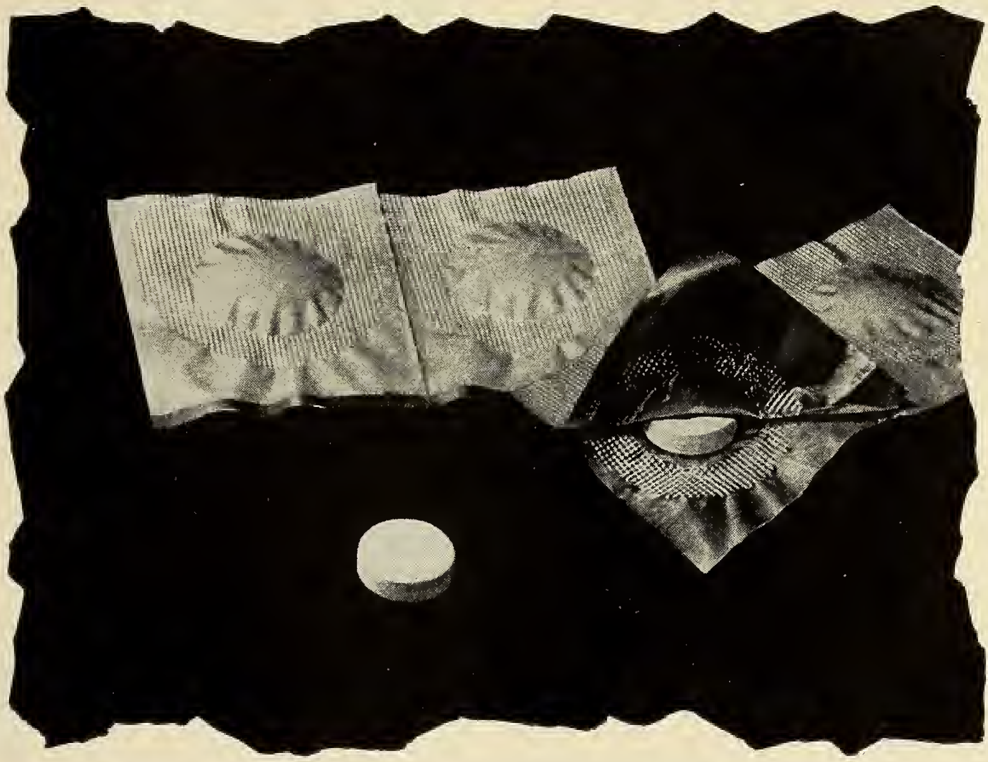

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ROBERT S. FORBES

(Continued from Page 374)

1913. In 1922 he took postgraduate work at the Northwestern Postgraduate School, and in 1925 at Vienna.

He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations, and the American College of Surgeons. He was a Scottish Rite Mason and member of the Shrine, and belonged to the Duluth Athletic Club and the Northern Country Club.

Dr. Forbes is survived by his widow, a daughter, Betty, and one brother, Mason M. Forbes of Carmel, California.

T. J. GAFFNEY

Dr. T. J. Gaffney of Lakeville, Minnesota, died November 27, 1945. Born in Minneapolis August 7, 1873, he obtained his M.D. at the University of Minnesota.

After practicing in Minneapolis a year or two he married Madeline Keller of Minneapolis and moved to Lakeville. He is survived by his widow, a brother John and a sister Mary, both of Minneapolis.

EDWIN LESLIE GARDNER

"The life of the dead consists in being present in the minds of the living."—Cicero.

Dr. E. L. Gardner died at his home January 29, 1946, at the age of fifty-nine years, following a two-year illness.

Edwin Leslie Gardner, son of William C. and Eva Gardner, was born August 2, 1886, in Jacksonville, Illinois. His high school education was received at Belmont Military Academy, Belmont, California. He entered the University of Minnesota in 1906, and after two years in the College of Science, Literature, and Arts, entered the Medical School, and was graduated in 1912. He was a member of Nu Sigma Nu, and Alpha Omega Alpha. He held first rank in a class of thirty, and was awarded the Bell prize in physical diagnosis. He served an internship at the Elliott Memorial Hospital and subsequently became assistant to Dr. J. W. Bell, after which he started his career in his chosen specialty—internal medicine.

His society memberships included: Hennepin County Medical Society (president 1930), Minnesota State Medical Society (editing and publishing committee of Minnesota Medicine), American Medical Association, Minnesota Pathological Society (president), Minneapolis Clinical Club (president), Minnesota Academy of Medicine (secretary), Minnesota Society of Internal Medicine (president), American College of Physicians. He was a member of the faculty of the University of Minnesota Medical School, and was attending physician at the Minneapolis General Hospital from 1914 to 1926.

At various times he was on the staff of Glen Lake Sanatorium, St. Mary's, Eitel, Asbury and Northwestern Hospitals. He was associated with Drs. L. S. Ylvisaker,

(Continued on Page 378)

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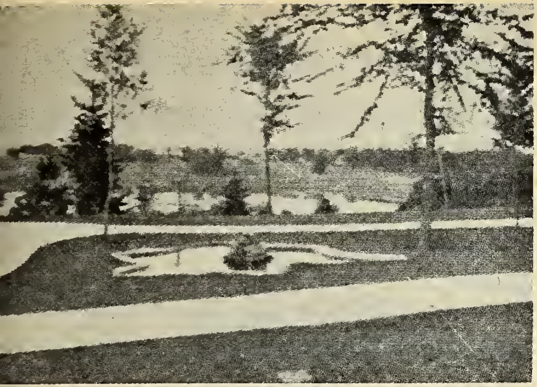

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EDWIN LESLIE GARDNER

(Continued from Page 376)

Robert Kennecott, Paul Rowe, Lewis Daniels, Willard White, Charles A. Hallberg, R. S. Ylvisaker, and the writer. He was a member of Hennepin Avenue Methodist Church, the University Club, and the Professional Men's Club.

He was much the same, both as an undergraduate and as a practitioner, always serious minded, and with a singleness of purpose. Had he been born a few decades earlier he would have been known as a pioneer, possessing that industry and diligence characteristic of the self-made man. His secret of life was work. It was a habit so ingrained that it brought him the respect of his teachers and confreres, and a large clientele. When latterly he took up the avocations of photography and music he followed these in the same arduous way that he applied to medicine. In fact, it is not only conceivable but more than likely that this not unmixed virtue contributed to his demise at an earlier time than would otherwise have been so.

In the words of Wm. Osler: "Work not only has been the touchstone of progress but it is the measure of success in everyday life."—T. A. PEPPARD, M.D.

PROSPER ERNEST SHEPPARD

Dr. Ernest Sheppard, for fifty-three years a practicing physician in Hutchinson, Minnesota, passed away February 28, 1946, in his eighty-third year.

Prosper Ernest Sheppard was born at Cannon Falls, Minnesota, March 10, 1862. When he was four years old his parents moved to Lake Allie, Renville County, where he received his early schooling.

Later he attended school in Hutchinson and then at Mankato, where he graduated from high school. He then enrolled in the University School of Medicine from which he graduated in 1891.

His first practice was in the town of Waconia, Carver County, in the year 1891. In 1892 he was united in marriage with Miss Gertrude Walker of Mankato, who died in 1895 leaving an infant daughter Agnes (now Mrs. F. L. Sheppard).

In 1892 he gave up his practice at Waconia and came to Hutchinson where he has since resided and practiced medicine with the exception of a year of leave in 1902-1903, during which he made a trip around the world, with a stop-off in foreign medical schools for postgraduate work.

In 1910 he was united in marriage to Miss Grace Goodnow, daughter of one of Hutchinson's pioneer families. To them were born two sons: Dr. Charles G. Sheppard and Warren Ernest Sheppard. Dr. Sheppard was a member of the McLeod County Medical Society and the Minnesota State and American Medical Associations.

Dr. Sheppard is survived by his widow, his daughter Agnes, his two sons and three grandchildren.

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Of General Interest

Dr. John B. Erich, of the Mayo Clinic, was guest speaker at the March meeting of the Cerro Gordo County Medical Society held in Mason City, Iowa.

* * *

Dr. Vincent Ryding, of Minneapolis, has entered practice at Howard Lake, where he has leased the offices recently vacated by Dr. David H. Rolig.

* * *

Dr. Lealdes McK. Eaton, of the Mayo Clinic, has been on a clinical trip which included visits to the Johns Hopkins Hospital in Baltimore and the Edgewood Arsenal, Maryland.

* * *

Dr. and Mrs. Byron O. Mork, Jr., of Worthington, spent March and part of April vacationing in and around Santa Monica, California, where they went by plane.

* * *

Dr. Donald Houston has returned to his practice at Park Rapids from three and a half years in the Navy. Dr. Houston, a lieutenant commander, was on duty in the South Pacific for two years.

* * *

Dr. Robert Ramsey is associated in practice with Dr. Frank E. Burch at 424 Hamm Building, Saint Paul, following his discharge from the Royal Canadian Air Force, in which as squadron leader he acted as consultant in ophthalmology.

* * *

Dr. Gerald Knutson, formerly in practice at Thief River Falls, will open offices in Hallock as soon as he can secure suitable quarters. At the time of his induction in the Army Medical Corps Dr. Knutson was located at Greenbush.

* * *

Dr. Robert Demo, who was in residence at the Rochester General Hospital when inducted into military service, is now associated with the Surgical and Medical Clinic at Albert Lea. Dr. Demo was on duty in the Pacific Theatre for twenty-eight months.

* * *

The Veterans Administration has announced that Dr. Ralph Ghormley, orthopedic surgeon at the Mayo Clinic, has accepted the position as head of the orthopedic surgery section, professional services division of the Veterans Hospital in Minneapolis.

* * *

Dr. Everett R. Youngren is constructing a new medical center in the Payne Avenue district in Saint Paul. Consisting of fifteen rooms, it will include a department for tonsillectomies, dental facilities and the latest x-ray and diagnostic equipment.

* * *

Dr. Walter C. Alvarez, of the Mayo Clinic, has been in Hartford Connecticut, where he gave two addresses before the Hartford Medical Society. Dr. Alvarez' subjects were "Small Usually Unrecognized Strokes—a Common Disease," and "What is Wrong with Dispeptics whose Findings are All Negative?"

* * *

Dr. H. F. Schrockenstein of Saint Paul has received his discharge from the Navy, where he served as a lieutenant commander at the Special Augmented Hospital No. 4 on Okinawa. He is at present taking a course in Basic Sciences at the University of Minnesota Medical School.

* * *

Dr. Frank Adair, Saint Paul, who as a lieutenant commander in the Navy, served for twenty months in the Pacific Theatre and a later assignment in San Diego, California, was discharged on January 18, 1946. Dr. Adair has opened offices in the Lowry Medical Arts Building, where he will specialize in diseases of the eye, ear, nose and throat.

* * *

Dr. Elmer Paulson, who has been in the X-ray Department of the Army Hospital at Portland, Oregon, for the past three and a half years, has been discharged and has resumed his practice at Elbow Lake in association with Drs. Lester and E. Lillian Parsons. Just prior to his release from service, Dr. Paulson was promoted to the rank of major.

* * *

Dr. Arthur J. Henderson, of North Saint Paul, has been appointed deputy coroner for North Saint Paul and immediate vicinity by Dr. Carl A. Ingerson, coroner of Ramsey County. Previously, when the services of a coroner were required in the community, it was necessary to call one from either Saint Paul or White Bear.

* * *

Dr. Edward F. Burch, Saint Paul, has returned from service and has resumed the practice of ophthalmology in association with his father, Dr. Frank E. Burch, at 424 Hamm Building, Saint Paul. During his service, Dr. Burch was stationed at O'Reilly General Hospital, Springfield, Missouri, where he was executive officer and eventually commanding officer with the rank of colonel.

* * *

Discharged after forty-four months of service, Dr. Edward Colp, a commander in the Navy, has resumed his medical practice in Robbinsdale, with temporary offices at 4197 West Broadway. Dr. Colp was in active duty in the New Hebrides, South Pacific, for twenty-two months. During his final months of service he was senior medical officer at Wold-Chamberlain Field.

(Continued on Page 382)

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to CALCULATE
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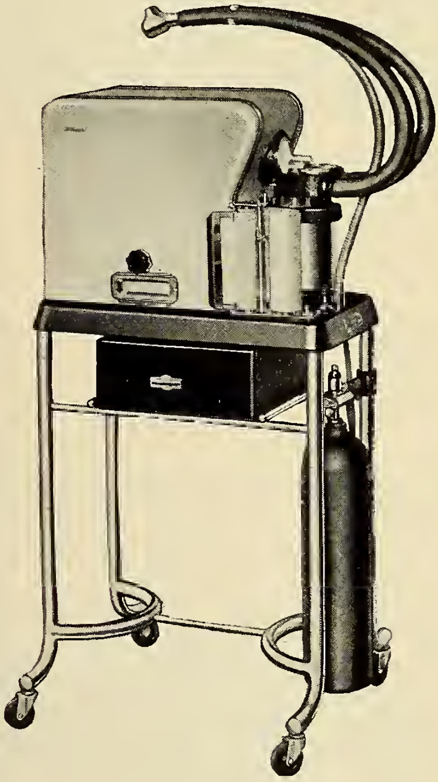

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(Continued from Page 380)

Dr. Hjalmar E. Mortensbak, who took over Dr. Howard A. Vogel's practice in New Ulm, while the latter was in military service, has moved with his family to Great Falls, Montana, where he has purchased the practice of Dr. Fred Andrews, now retired. Dr. Mortensbak was a member of the Nicollet Clinic in Minneapolis just prior to his going to New Ulm and had formerly practiced at Hanska for about six years.

* * *

Under the sponsorship of the American Committee for Yugoslav Relief, Dr. Robert Neubauer, a former medical officer in the Yugoslav Army and a member of the Yugoslav Red Cross Delegation, addressed medical students and staff at the Minnesota University on March 4. Dr. Neubauer, who worked in the underground hospitals and organized medical services for partisan fighters during the war, discussed medical problems in Yugoslavia.

* * *

Shortly before the expiration of his terminal leave on March 1, Dr. Joseph Berkson, head of the Section on Biometry and Medical Statistics at the Mayo Clinic, was awarded the Legion of Merit for "having contributed immeasurably to the advancement of medical statistics in developing new methods of presenting and interpreting statistical data as applied to Army Air Force matters." Dr. Berkson, with the rank of colonel, served as chief of the Statistics Division, Office of the Air Surgeon, Headquarters Army Air Forces.

* * *

Dr. James R. Weir, formerly of Minneapolis, has moved with his wife and two small children to Goodhue, where he has opened offices for general practice. Dr. Weir is a graduate of Wheaton College, Illinois, where he took his B.A. and the University of Illinois Medical School. He interned at St. Barnabas Hospital in Minneapolis, and for the past eighteen months was associated with Dr. Owen F. Robbins, Minneapolis, specializing in obstetrics.

* * *

Dr. Charles F. Brigham, Jr., who before joining the Army Medical Corps in July, 1942, was in practice in Saint Paul, is now associated with the St. Cloud Clinic.

Dr. Brigham is the son of Dr. C. F. Brigham, of St. Cloud. He graduated from St. John's University in 1937 and the University of Minnesota Medical School in 1941. While in the Army he served practically all of the time at 262nd General Hospital and the Gorgus Hospital in the Panama.

* * *

Dr. Anthony H. Field, a captain in the Army Medical Corps for twenty-three months, has returned to his position as physician and surgeon at the Sanford Hospital in Farmington. Dr. Field was in England

(Continued on Page 384)

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When you laugh, the world laughs with you, as they say—and when you enjoy *the pause that refreshes* with ice-cold Coca-Cola, your friends enjoy it with you, too. Everybody enjoys the friendly hospitality that goes with the invitation *Have a Coke.* Those three words mean *Friend, you belong—I'm glad to be with you.* Good company is better company over a Coca-Cola.

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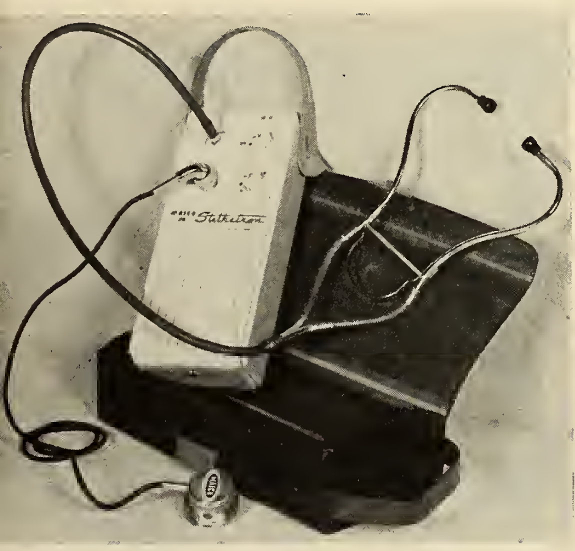

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(Continued from Page 382)

with the 109th Hospital unit for eleven months. Returned to this country in June, 1945, he was assigned to the Separation Center at Camp Grant, Illinois, where he served until his discharge on January 16, 1945. Five days later he had resumed his practice in Farmington.

* * *

Following the arrival in Aitkin of Dr. F. C. Closuit, Dr. Irvin L. Mitby's new assistant, Dr. Mitby left for Minneapolis for several weeks' work in diseases of the eye under Dr. Robert Tracht at the University of Minnesota School of Medicine.

Dr. Closuit, who was recently discharged from the Army Medical Corps with the rank of major, graduated from the University in 1941.

Mrs. Closuit, a medical technician before her marriage, will have charge of the laboratory and x-ray work in the office.

* * *

After forty years of practice in Harmony, Dr. Charles M. Tierney has sold his practice to Dr. Alfred H. Wolf, of Minneapolis, and is retiring because of ill health.

Dr. Wolf was born in Chatfield, but his youth was spent in La Crosse, Wisconsin, where his parents moved when he was two months old. He is a graduate of the University of Wisconsin and the Medical School of the University of Pennsylvania. He interned at St. Mary's Hospital in Minneapolis and was inducted into the Army Medical Corps in October, 1944.

* * *

Dr. Donald Hastings, successor to Dr. J. Charnley McKinley as chairman of the Department of Psychiatry and Neurology at the University of Minnesota, assumed his duties on April 1. Dr. Hastings, an alumnus of the University of Wisconsin, was chief psychiatrist of the Eighth Air Force during the war. Formerly, he was a member of the staffs of the University of Pennsylvania Medical School and the Women's Medical College in Philadelphia.

Dr. Burtrum C. Schiele, psychiatrist, and Dr. Abe B. Baker, neurologist, are Dr. Hastings' associates.

* * *

A two-day institute on Cancer Education was held in Duluth on March 12 and 14 under sponsorship of the Duluth Division of the Minnesota Cancer Society, the Duluth Community Health Committee and the University of Minnesota Extension Division.

Dr. Fredolph H. Magney, of Duluth, presided at the first meeting at the Hotel Spalding, when Dr. William A. O'Brien, professor of preventive medicine at the University of Minnesota, spoke on "The Nature of Cancer."

There were two sessions on March 14; one at the Hotel Spalding at two o'clock in the afternoon and the other at the Chamber of Commerce at eight P.M.

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A hospital for the care and treatment of Nervous and Mental disorders. Quiet, cheerful environment. Specially trained personnel. Recreational and occupational therapy.

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The speakers at these sessions were Dr. Russell J. Moe, Dr. M. V. Knoll, Dr. Arthur H. Wells and Dr. Meriam G. Fredricks.

* * *

Dr. Philip A. Kees, formerly of Saint Paul, a graduate of the University of Minnesota, where he took his science degree, and of the Pennsylvania University Medical School, has resumed his practice at Springfield, Massachusetts, after four years in the Army. Dr. Kees also did research and studied orthopedic surgery at the Mayo Clinic. His war service included duty as chief of surgery at air base hospitals, orthopedic surgeon at an evacuation hospital and operating surgeon of a paratroop combat team. He was wounded three times and was awarded the Purple Heart with bronze clusters, the Bronze Star and the Silver Star.

* * *

After more than four years in the Navy, Dr. James P. O'Keefe has engaged in the practice of surgery and medicine at St. Cloud in association with Dr. Francis [illegible]. Schatz.

Dr. O'Keefe is a graduate of St. John's University and Marquette Medical School, where he finished in 1940, when he was assigned to the Naval Hospital at Baltimore Maryland, and later to Birmingham, Alabama. From there he was sent to Pensacola, Florida, where he graduated as a flight surgeon. In the closing months of the war he was attached to a B-25 Marine Bombing Squadron in the Pacific.

* * *

After fifty years of service to Balaton and the surrounding community, Dr. Charles Germo has closed his offices and has written *finis* to his medical practice there.

Dr. Germo opened his offices in Balaton in 1895 shortly after graduating from the University of Minnesota Medical School and, except for a brief interval when he was in the armed forces during World War I, he has been in continuous practice there ever since. Beginning when he was twenty-three, the story of Dr. Germo's practice is a saga of the age of oxen, which were in common use, when he first went to Balaton, through the machine age into the era of airplane transportation.

Dr. and Mrs. Germo are closing their home and moving away from Balaton.

* * *

Speakers at the annual conference of the thirty-four county and district medical societies of the Minnesota Medical Association held in Minneapolis on March 2 included Dr. John R. Paine, of the staff of the University Hospital and Dr. Richard Hullseick, of Saint Paul, who talked on "Medical Care for Veterans"; Dr. Arthur H. Wells, pathologist, Duluth, Dr. Berton J. Branton, Willmar, and Dr. Alfred W. Adson, of the Mayo Clinic, and Dr. Albert J. Chesley, secretary of the Minnesota State Health Department, who explained the distribution of the blood plasma which was recently presented to the State by the American Red Cross. Ray Amberg, superintendent of the Uni-

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versity Hospital, reviewed the progress of the State hospital survey, and Carl D. Hibbard represented the Veterans Administration.

* * *

The return of Dr. Joseph Emon to his practice in Farmington has enabled his brother and associate, Dr. Albert J. Emon, to get away for a much-needed vacation, which he is spending in Oklahoma and California.

Dr. Joseph Emon, a major in the Army Medical Corps, was in service for fifty-one months. His first assignment was at Ft. Ord, California, where he had charge of a medical clearing station for eleven months. From there he was sent to Alaska as commanding officer of the station hospital there and also post surgeon at Bethel and Seward. Returned to the States in February, 1944, Dr. Emon was placed in charge of the Medical Technicians' School, Billings General Hospital, Ft. Benjamin Harrison, Indiana. Later he was assigned to Camp Atterbury Convalescent Hospital as battalion surgeon, where he remained until his terminal leave.

* * *

Recent returnees from military service to the Mayo Clinic include Dr. S. B. Lovelady, Dr. Hugh R. Butt, and Dr. Lucian A. Smith.

Dr. Lovelady, a lieutenant colonel in the Army, entered service on August 4, 1942. He was executive officer of the 182nd General Hospital in England for approximately eighteen months, when he was returned to this country and assigned to Camp Grant, Illinois, where he was in charge of officers of the medical division of the separation center. Dr. Lovelady is a consultant in obstetrics and gynecology at the Clinic.

Dr. Smith, a major in the Army, was inducted in June, 1943. He served overseas as a general medical officer with the 237th Station Hospital in New Guinea and Luzon, and was awarded the Bronze Star for meritorious service.

Dr. Butt, a lieutenant commander in the Navy, entered service on July 1, 1942. He was stationed at the naval hospital at Corona, California, for two and a half years before serving overseas on the hospital ship, *USS Repose* for nine months in the China Theatre. Although Dr. Butt's terminal leave did not expire until April 12, he resumed his work at the Clinic six weeks or more ago.

Both Dr. Smith and Dr. Butt are in the general medical section at the Clinic.

* * *

Dr. Winchell McK. Craig, the only rear admiral in the USNR Medical Corps, whose terminal leave expired on April 8, has resumed his work in neuro-surgery at the Mayo Clinic. Dr. Craig is also a professor of neuro-surgery at the Mayo Foundation Graduate School at the University of Minnesota.

For the six months following his entrance into active service on December 26, 1941, when he was made commander of one of the two units organized at the Mayo Clinic, Dr. Craig was stationed at the Naval Hospital in Corona, California. From there he was

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ransferred to the National Naval Medical Center in Bethesda, Maryland, where he served as chief of surgery until September, 1945.

Dr. Craig made three overseas special missions. The irst took him to England, where he landed on D-Day une 6, 1944. As consultant surgeon to the naval forces n the ETO, he made an inspection tour of facilities n England, France and the Normandy peninsula. In he fall of 1944 he was sent by the Surgeon General of he Navy to the Pacific Theatre.

In September and October, 1945, Dr. Craig made a 75,000-mile flight throughout the Pacific, covering Pearl Harbor, Guam, the Marshall Islands and the Philippines on a survey to determine postwar requirements n medical activities and medical education in the Navy. t was the completion of this mission which brought he promotion to rear admiral, the first time this rank has ever been conferred on a Medical Reserve officer. From November until his release from military duty, Dr. Craig was in the Professional Division of the Bureau of Surgery and Medicine in Washington, D. C., where he was engaged in establishing postwar graduate training in naval hospitals.

* * *

The Hennepin County Medical Society has announced he return from military service to practice of the ollowing physicians:

Dr. Nathaniel J. Berkwitz, psychiatrist, with offices n the Medical Arts Building. A lieutenant colonel, Dr. Berkwitz had been in the Army Medical Corps since 942.

Dr. David A. Burlingame has resumed his practice n his offices in the Medical Arts Building. A major n the Army, he entered service in November, 1942.

Dr. S. Paul Ehrlich has returned to the practice of urgery with offices in the Medical Arts Building. A ommander in the Navy, Dr. Ehrlich had twenty-nine months of service.

Dr. Joseph C. Giere, urologist, has reopened his offices in the Metropolitan Bank Building. Dr. Giere was nducted into service in October, 1943.

Dr. Fred C. Holzapfel has resumed general practice t 1101 West Broadway. Dr. Holzapfel had been in ervice since March, 1944.

Dr. Gerald M. Koepcke has resumed his practice in diseases of the eye, ear, nose and throat, at 801 Physicians and Surgeons Building. With the rank of commander Dr. Koepcke was in the Navy for thirty months.

Dr. Frank Larsen has opened his offices for general practice at 1527 East Lake Street. A lieutenant commander in the Navy, Dr. Larsen entered service in October, 1942.

Dr. Henry Michel has resumed general practice with offices at 5004½ Xerxes Avenue. A captain in the Army, Dr. Michel was inducted into service in January, 1943.

Dr. John T. Pewters, obstetrician, has returned to his offices in the Donaldson Building. A major in the Army, Dr. Pewters was in service for thirty-six months.

Dr. Robert Priest has resumed his practice in dis-

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eases of ear, nose and throat in his offices in the Medical Arts Building. Dr. Priest entered service in August, 1942, and was a major in the Army.

Dr. Melvin B. Synikin, has re-opened his offices in the Medical Arts Building for the practice of obstetrics and gynecology. A captain in the Army, Dr. Synikin entered service in August, 1943.

HOSPITAL NEWS

Dr. Francis Fowler Callahan, superintendent of the State Tuberculosis Sanatorium at Walker, was the guest speaker at the annual meeting of the Isanti County Public Health Service held at Stanchfield on February 5.

* * *

Our Lady of Mercy Hospital in Alexandria is one of the seventy-five hospitals listed as approved in the twenty-eighth annual survey made by the American College of Surgeons.

* * *

St. Olaf's Hospital in Austin has engaged C. W. Hildreth as business manager. Mr. Hildreth was recently discharged from military service, where he was assigned to the Medical Administrative Corps.

* * *

Dr. John Edward Power was elected chief of staff of St. Mary's Hospital in Duluth at the annual staff dinner given by the Sisters of St. Benedict on February 7. Other department chiefs chosen at the same time were: Dr. N. R. Gowan, chief of staff elect; Dr. Frank Cole, anesthesiology; Dr. Anthony J. Spang, staff secretary; Dr. John A. Winter, eye, ear, nose and throat; Dr. Richard Bardon, medicine; Dr. Russel J. Moe, obstetrics; Dr. Mark H. Tibbetts, orthopedics; and Dr. Murdoch A. Nicholson, orthopedics.

* * *

Dr. Virgil E. Quanstrom was elected chief of staff of St. Joseph's Hospital, Brainerd, at the annual meeting and dinner given by the Sisters of St. Benedict. Dr. William E. Fitzsimons was made vice chief, and Dr. John Thabes, Jr., secretary and treasurer of the staff.

Guest speakers at the dinner were Dr. Keith R. Fawcett, of the Duluth Clinic, who discussed "Sinus Thrombosis" and Dr. John Rukavina, of the staff of St. Mary's Hospital, Duluth, who spoke on "Plasma Protein."

* * *

Dr. Harry Johnson was elected president of the staff of St. Andrew's Hospital in Minneapolis at the annual staff election. Dr. Johnson recently returned from two years' military service in the South Pacific. Dr. J. S. Blumenthal was made vice president, and Dr. Ronald E. Risch secretary-treasurer.

Dr. Irving Preine was elected secretary-treasurer of the Board of Trustees of the hospital at their meeting on the same date.

* * *

Under a Veterans Administration plan the Veterans' Hospital in Minneapolis will be staffed with 146 physicians, seventy-eight of whom—members of the faculty of the University of Minnesota Medical School—will officiate in consultant capacity. Actual care will be the responsibility of the other seventy-eight, all graduate doctors from the University, who will work full time under a fellowship system. Consultants will make regular periodic visits to the hospital and will be on call in case of emergencies. So far, twenty-two consultants and senior consultants and seven fellows have been approved.

* * *

Dr. Miland E. Knapp was elected chief of staff of St. Barnabas Hospital, Minneapolis, at the annual meeting of the medical staff. Dr. Knapp is president of the American Congress of Physical Medicine and Clinical Professor of Physical Medicine at the University of Minnesota.

Other officers chosen at the same time were Dr. Joseph T. Spano, vice chairman; and Dr. William E. Proffitt, secretary. Dr. Carl O. Rice, retiring chief of staff, and Dr. H. D. Giessner were appointed members of the executive committee.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE CARE OF THE AGED (GERIATRICS). Malford W. Thewlis, M.D. 5th ed. 500 pages. Illus. Price $8.00. St. Louis: C. V. Mosby Co., 1946.

The growing interest in the subject of geriatrics is attested by the circumstance that this very worth-while book from an author well qualified to write it is now in its fifth edition. Comparing this with the third edition one sees that there has been some fruitful concentration: the number of chapters has been reduced from thirty-eight to thirty-three and the illustrations from forty-four to thirty-five. The author introduces some new terms: "Geratology": geros, old age; logos, study thereof. He would thus introduce a term somewhat distinct from "Gerontology," the study of the aging process itself. Another Greek root is used to cover the field of hygiene and associated features. Thus the term "Gerocomia" is coined. Under this heading, the author outlines very interesting items leading up to the general cultivation of habits and hobbies.

In Part IV the author then systematizes the difficulties of the aged in terms of organs, both anatomically and physiologically. After the various chapters some of the older references are left out and certain others added. I approve under the dietary schedule the abandonment of many listed menus. Geriatric nursing, in Chapter XII, is especially well outlined.

In any book for review one looks for items yielding what we may call "challenges and chuckles." For example, in a very good chapter on the relationship between disorders, diets and obesity, there is this significant statement: "In health there is the greater danger from the attendance upon the individual of a good cook than of a poor physician when he is sick"—or, at least, that is the general idea. Then the author comments upon the number of elderly women who smoke equally as vigorously as the men, and who are inclined during wakeful periods to get up and stumble around, seeking the sedation of a smoke. One elderly man set fire to his surroundings three times, but still insisted on smoking the weed.

The author has very sane ideas in regard to focal infection and the folly of wasting many useful teeth, just because the aging person accumulates cleassis squeaks. The book does not stress sufficiently protein sufficiency and simpler ways to maintain it in the extremity imposed by chronic illness, mental decay, malignancy and gastro-intestinal imbalance. I heartily recommend the book.

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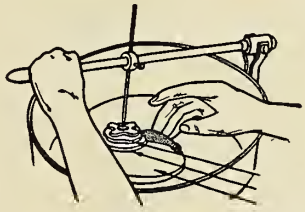

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[1] *Stare, F. J., and Thorn, G. W.: Protein Nutrition in Problems of Medical Interest, J.A.M.A. 127:1120 (April 28) 1945.*

[2] *Stare, F. J., and Davidson, C. S.: Protein: Its Role in Human Nutrition; Introduction, J.A.M.A. 127:985 (April 14) 1945.*

[3] *Anderson, G. K.: The Importance of Protein in Diet Therapy, J.Am.Dietet.A. 21:436 (July-August) 1945.*

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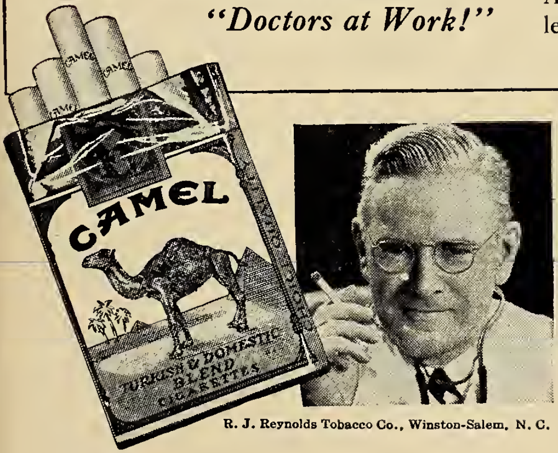
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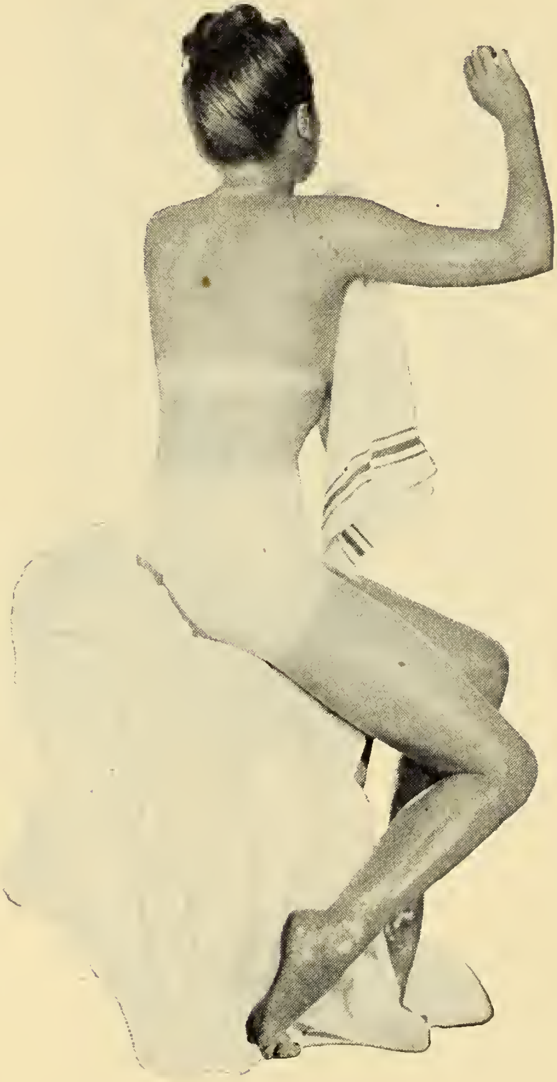

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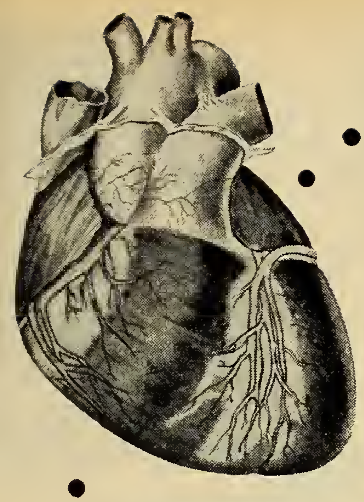

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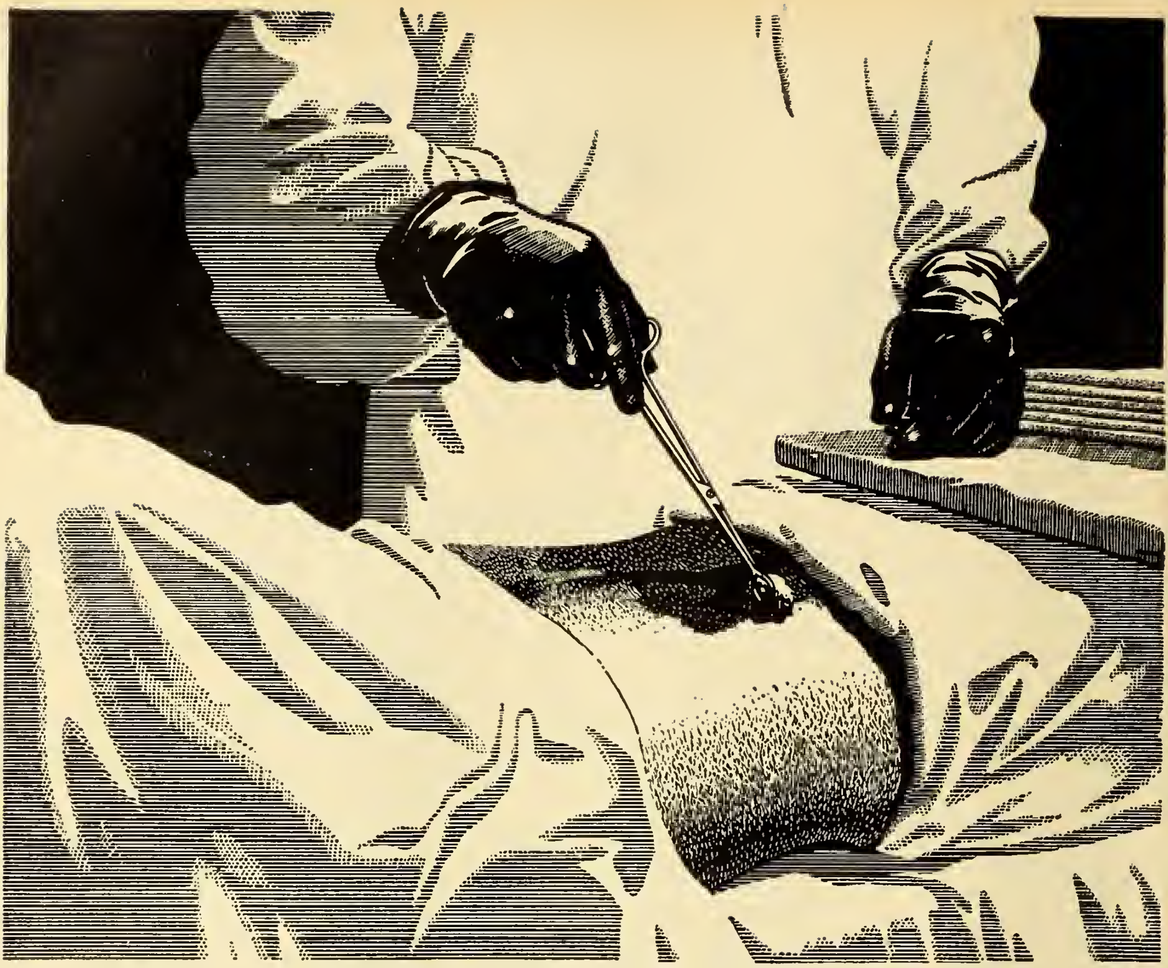

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 May, 1946 No. 5

MICE, MEN, MALIGNANCY

LEONELL C. STRONG, Ph.D., Sc.D.

Associate Professor of Anatomy, Yale University School of Medicine

New Haven, Connecticut

I WOULD like to take this opportunity of expressing my sincerest thanks to Dean Diehl, to his consulting committee on selection and through them to the Medical School and to the University of Minnesota for giving me the opportunity and honor of being with you this evening, of having my name added to the list of former men who, in the past, have given the George Chase Christian lectures on cancer research and of visiting this great midwestern University. It is not a hasty conclusion that leads me to express the opinion that the name of George Chase Christian, associated with the present Director of Cancer Biology at this University, will live long as a benefactor for the investigation of cancer, that greatest scourge that afflicts mankind at present.

Mankind is living in fear of its own destruction by the use of atomic energy in war. The rising death rate from cancer rarely makes the head lines as does the atomic bomb. Cancer's attack on man is more insidious. We are told by competent statisticians that, unless some advance is made in the control of cancer, by 1960 nearly a third of a million people will die each year from cancer in the United States. It is the broad social principles possessed by such individuals as Mrs. George Chase Christian and other benefactors, the untiring labor of public health officials, visiting nurses and other layworkers in the field, the medical profession and the patient scientist working in the laboratory, that will help in the prevention of such a catastrophic outcome.

We have two sons. One, when he started to talk, said he was "going to be a doctor that put iodine on." The other, that he was "going to be a mouse doctor like daddy is." Now a doctor that puts iodine on is self-evident. But a mouse doctor! At thirty-nine months of age Junior was given a mouse to play with. It was not long before he said, "Look, daddy, this mouse has a cancer. Jumjum going to operate—jumjum going to take cancer off." Some time later I returned to the laboratory and there was Junior, trying to thread a needle with suturing silk. The mouse was still alive, an incision had been made neatly over the cancer, the cancer was gone and a complete record of the operation had been entered into my permanent ledger. I merely use this illustration to introduce the idea that a mouse does develop cancer. This is not an archaic idea. Many medical men still say that cancer is peculiarly a human disease. Only a few years ago I was discussing before a medical group some of my results of producing stomach cancer in mice. The eyebrows were raised and considerable whispering was taking place—so I announced that I had brought several mice with cancer into the room and would be willing to show them after the meeting. One of the skeptics came forward and examined the mice very carefully. I demonstrated the primary site of the cancer in the stomach, its spread into the liver, onto the diaphragm and the peritoneum and down through the belly. I began to see a broad smile come over

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The George Chase Christian Lecture delivered February 7, 1946, at the University of Minnesota.

The research upon which this lecture is based was supported by grants from The Anna Fuller Fund and The Jane Coffin Childs Memorial Fund for Medical Research.

his face and he volunteered, "You know I had a man that died of stomach cancer last week and he looked just like that mouse."

A few years ago, seven to be exact, a young hyperkinetic anatomist came to New Haven from a large mid-western university. He was shown the many types of tumors and cancers that were being produced in mice. His comment was, "If I weren't a Boy Scout, I would wager that not a man on the faculty of the university from where I come has ever seen a mouse with cancer." And at present, just seven years later, this university is assuming a leading part in cancer research and they are emphasizing the use of the mouse for this work.

But the eastern seaboard was not far ahead of the rest of the United States in experimental cancer research. In the year 1900, spontaneous tumors in mice were so rare that their commercial value was $300. Now the market value is somewhere in the neighborhood of seventy-five cents. The change in supply was brought about, almost exclusively, by the establishment of pure strains of mice by the geneticist, and the only technique employed was the application of the progeny test —that is, the reversal of the old principle of classifying offspring by characterizing parents. Geneticists, knowing that many intrinsic capacities are hidden or recessive in inheritance, wait to see what will show up in the offspring before they classify the parents. This technique employs the genetic principles of hybridization, controlled brother to sister or other restrictive matings, selection and elimination of unfavorable sublines that do not conform to type. You may realize that this new technique deviates considerably from the older one employed by the pioneer in the genetics of cancer susceptibility, Maud Slye of Chicago. She employed the so-called "pedigree system" by which is meant that all descendants of a single cross were kept alive as long as possible and autopsied at the time of their deaths. Thus she was able to produce for the first time a tremendous number of malignant and benign tumors in mice. The newer system of selection and elimination by selective restrictive mating permits elimination of uncontrolled biological or genetic variability thus aiding in placing cancer research on a quantitative basis. As a result of this newer refinement of genetic research, a firmer basis resulted which permitted rapid progress in the study of the nature of cancer to be made. The establishment of the inbred or pure strai mouse made possible many discoveries in the fiel of pure genetics, as well as other contribution outside genetics, such as the detection of th milk influence in adenocarcinoma of the mammar gland in mice that probably never would hav been made or would have been considerably delayed.

Two of these strains are the A and the C_3H These mice have been produced by a continuou restrictive mating, usually of a brother-to-siste or a son back to its own mother for many generations. In the F13 generation after several inbred generations had been produced, spontaneou tumors of the mammary gland began to appear— and further that when the disease had been introduced into the inbred mice for some still unknown reason possibly the introduction of th milk influence of Bittner in a genetically prepared receptive mouse, cancer continued to develop spontaneously in each and every female o each successive generation. The A strain mic also develop spontaneous tumors of the lung i rather high numbers, although here the milk influence does not operate. In the C_3H strain, a similar situation was obtained as far as spontaneous adenocarcinoma of the mammary glan was concerned. The C_3H mice were develope by a continuous selection toward high susceptibility to such tumors. They consequently not onl develop these tumors spontaneously at an earlie age than do female mice of the A strain but als differ in that virgin mice show as high an incidence of breast tumors as do female mice that are used for breeders. But these mice also developed a new characteristic favorable for the investigation of another aspect of cancer in that they possess a very high susceptibility to give rise to tumors induced by chemical means, a wholly unexpected result. We shall have more to say about these induced tumors in a few moments.

We have indicated very briefly some of the advantages of the use of inbred strains of mice. Perhaps it may not be out of place for the individual who developed many of the standard inbred strains and who has used them in quantitative cancer research for nearly thirty years, to point out some of their limitations. In the first place, the inbred mice give rise to very few types of spontaneous tumors. When one enumerates: (1) adenocarcinoma of the mammary gland; (2)

adenocarcinoma of the lung; (3) adenomatous hyperplasia of the stomach; (4) hepatoma; (5) myelogenous; and (6) lymphatic leukemia, the entire list of spontaneous tumors that occur in any degree of frequency has been given. In the second place, these spontaneous tumors, compared to human material (the criteria of malignancy being invasion and ability to metastasize) are not particularly very malignant. Opinion differs considerably, however, upon these points.

While the geneticists have occupied themselves in the development of standard strains of experimental animals, particularly mice, where biological variability has been reduced to a minimum, the organic chemists have also been interested in cancer. Following the lead supplied by observations that chimney sweeps develop a peculiar so-called chimney-sweep's cancer upon a long-continued exposure to soot, the chemists have synthesized a large number of pure chemicals, which when injected into or applied to suitable experimental animals will cause cancer to arise at the site of application. These chemically induced tumors are usually more malignant than the spontaneous ones occurring in animals. They also occur in greater variety depending upon several factors under experimental control, one of which is the site at which the cancer-producing substance has been applied.

We now have before us, therefore, all the experimental techniques necessary for the investigation of cancer. The problem can be stated thus. Can we produce in experimental animals the vast array of very malignant cancers and relatively benign tumors that afflict the human population in ever-increasing numbers? The answer is yes and we shall now proceed to develop this thesis for you, to show the results obtained, to indicate the biological effects of injecting a powerful cancer-producing substance, 20-methylcholanthrene, into mice over a number of generations and to draw some pertinent conclusions.

From immemorial time the mundane egg has been used as a symbol for life. We, therefore, proceed to put the human population into an egg. Man is characterized by great variability when the spontaneous tumors and cancers to which he gives rise are classified. It is also probably true that no two individuals (except identical or monozygotic twins) ever have the same genetic constitution. One component of this extremely variable genetic state, the germ plasm, is made up of innumerable pairs of genetic determiners or factors or genes, each pair of which may exist in three combinations (the homozygous dominant, the heterozygous dominant-recessive and the homozygous recessive) one may realize that the mechanism responsible in part for this great genetic variability has been indicated. A gene is the physical entity within the germ plasm which transfers a characteristic of the parent to its offspring. The characteristic may be either manifest or potential. It is more likely, therefore, that the great display of spontaneous tumors and cancer that man gives rise to may be the result of the great variability of his intrinsic or genetic constitution, influenced by continuous contributions from diversified ancestries.

In contrast to the biological situation found in man, we have, in the production of the inbred mouse, another genetic situation. Here we have, over a period of many generations, by 105 brother-to-sister matings in the case of the A strain referred to previously, eliminated a considerable number of potential grandparents or other more distantly related ancestors, thus preventing many new and old genetic variables from getting into the animal descent. We also have permitted many of the so-called heterozygous or hybrid combinations of unit pairs of genes to reduce variability by becoming pure or homozygous. Eventually a very great number of the possible gene combinations are reduced to uniformity and the animal is called a pure-bred or homozygous animal. The homozygous animal may be said therefore to possess great uniformity in genetic constitution, that is, all animals of a given inbred line have precisely the same genetic constitution. They even exceed the genetic situation found in man only in monozygotic twins. Now the inbred animal shows greater uniformity in every biological characteristic that has ever been measured than do mice belonging to unpedigreed nondescript stocks produced by promiscuous or uncontrolled matings. And this is also true for the three types of tumors, the spontaneous, the transplanted, and the induced that have been made available to cancer investigators. Therefore, this great uniformity of tumor types may very well be due to the great genetic uniformity that mice possess. It is also true that mice of different inbred lines, differ from each other in (1) genetic constitutions and (2) the types of tumors obtained in them.

Now by crossing together two mice belonging to two separate or distinct inbred lines, we may pass in one generation from the homozygous state of the inbred mouse to the heterozygous state. The number of genes that will pass into the heterozygous state through this process of hybridization depends upon the number of divergent or contrasted unit characters that the original homozygous mice possess. It should be readily apparent that if the two parents that produce the so-called F_1 individual were pure for many characters, then all their first generation hybrids will be uniform although heterozygous for many gene-pairs in their genetic constitution. . . . The greater will be the degree of hybridity, the greater the number of different unit characters possessed by the mice of the two ancestral stocks. It has also been ascertained that mice in the heterozygous state are not only uniform in genetic constitution but also in the types of tumors obtained in them: (1) the spontaneous; (2) the transplanted; and (3) the induced.

When we begin to breed heterozygous mice together by any system of restrictive mating we begin the return to the homozygous state—only here the process of return is slow and takes many generations and many years. (Mice produce under the most favorable conditions only four or five generations per year.) No one can say what state of inbreeding mankind is in at present. When one projects backward in time only four or five hundred years, the potential number of parents and grandparents needed to produce you and me, it may be realized that some blood relationship must have existed between some of the parental lines—thus any restriction of the potential total number of grandparents would eliminate some possible intrinsic biological characteristics or variations and thus produce some degree of inbreeding. But really it does not matter what biological state man is in at present—certainly somewhere between the two extremes of heterozygosity and homozygosity. I refer to this state, for want of a better term, as the polyzygous state, referring to the fact that man is derived from many kinds of zygotes (that is of fertilized eggs from which all of us at one time have developed). No matter where man is along the road, the continuous inbreeding of heterozygous or hybrid mice by a consistent system of restrictive mating must of necessity produce or duplicate the same biological state in which man is in at present, before the final return to another group of inbred mice has been reached. In other words, we now have polyzygous mice to go with polyzygous man. Polyzygous mice have biological or genetic variability. Do they also give rise to many kinds of tumors and cancers?

To wait for spontaneous tumors in mice takes too much time. Many of them, particularly the internal ones, do not occur until two or even three years of age. In order to fill the need, therefore, the process of the production of experimental cancer must be speeded up. For this, we make use of the cancer-producing chemical, particularly methylcholanthrene, that the chemists have synthesized. We do not intend to discuss whether the cancer-producing chemicals ever induce cancers that would not normally occur in experimental animals or merely hasten their appearance. The evidence for the final conclusion on this point is not yet available.

The past experiences of many cancer investigators have shown that when you inject methylcholanthrene subcutaneously you get a fibrosarcoma at the site of injection. The incidence of this type of tumor in my experience is not as frequent as I should expect from reading the literature and I suspect that the cancer-producing potency of methylcholanthrene is like Mark Twain's reported death, "slightly exaggerated." But one does get a large number of locally appearing fibrosarcomas at the site of injection. Every scientist in cancer research has obtained these and therefore it is not necessary to induce fibrosarcomas indefinitely. If there is any value in the concept that genetic uniformity gives cancer uniformity and genetic variability gives cancer variability, then a specific type of cancer should respond to genetic selection. This concept has been proven to be true. I proceed to eliminate fibrosarcoma not by surgery or by x-ray, but by the application of the genetic principle of the progeny test—merely in keeping the descendants for future generations of that mouse in each generation which developed fibrosarcoma last or which did not develop fibrosarcoma at the site of the methylcholanthrene injection at all—and, this is important, the elimination of all sublines that did not conform to type, that is, that did not show some resistance to fibrosarcoma. Selection without elimination would lead nowhere. This also means selection toward longevity or the increased ability to live a longer time. It was found that the C_3H mice possess great susceptibility to induced tumors. Another strain, the NH, shows a certain degree of resistance to fibrosarcoma, the mice developing them at a slower rate than do mice of the C_3H strain. Instead of getting fibroscarcomas in all mice, only approximately 90 per cent of them do so. Observations on the successive groups of NH mice indicate the positive effect of selection toward resistance or the elimination of potential cancer at the site of injection. The trend is highly significant, there being 1,000 mice in each group except toward the end when my patience could not wait for a complete complement of 1,000 mice. The next to last group contains data on 500 mice and the last one only 250.

The regime of selection produced results far beyond my placid imagination, which according to some associates is rather pronounced. Selection eliminated or prevented many fibrosarcomas from appearing, thus permitting many mice to live longer than they normally would. They either lived a normal life span without any cancer or (remember they are polyzygous mice) practically blossomed out with benign and malignant tumors all over the body. A new and vast array of very malignant tumors appeared. I not only duplicated in experimental animals many of the very malignant tumors arising in man but in certain particulars, such as the incidence of multiple malignancies, even exceeded the cancer situation of man himself.

I believe I have demonstrated* for you the production of a vast number of tumors and cancers in mice. In brief résumé, I would like to point out that now many very malignant tumors in mice are available for study. In addition to the older malignant tumors, such as epidermoid carcinoma and fibrosarcoma, that many investigators have reported, we have produced in these special polyzygous mice the following malignant tumors: (1) anaplastic carcinoma of the mammary gland which metastasizes to bone, erodes the bone and replaces the bone marrow, characteristics that are found in human cancer of the breast; (2) bronchiogenic carcinoma, metastasizing throughout the thorax, including the heart; (3) mesothelioma with extensive metastases; (4) primary carcinoma of the liver; (5) squamous carcinoma; adenoacanthoma and adenocarcinoma of the stomach with multiple metastases; (6) leiomyosarcoma of the uterus with extensive metastases throughout the belly; and (7) liposarcoma with similar widespread metastases. Susceptibility to many of these very malignant tumors is selectively handed down to subsequent generations, and one of these, adenocarcinoma of the stomach, appears in the untreated descendants for at least five generations.

The following discussion will show a new and unexpected phenomenon, the induction of germinal mutations in the experiment of injecting a powerful cancer-producing substance into mice for several successive generations. You will note that from the F_4 generation onward, both parents at sixty days of age were injected subcutaneously with 1 mg. of methylcholanthrene dissolved in 0.1 c.c. of sesame oil. All mice in direct descent developed fibrosarcomas at the site of injection. The latent period between the time of injection and the appearance of fibrosarcoma is gradually becoming longer due to selection toward resistance. All mice were brown and for several generations all their progeny were brown (brown being inherited as a recessive). The average litter size was for the first five experimental generations 5.5 and for the second five generations 4.4, or an average litter size of 5.0 mice per litter during the entire ten generations. You will note that in the third litter of mice produced by female S197062 that there appeared three unexpected black mice in addition to four normally expected brown mice. The new black pigmentation was proven to be inherited as a dominant. We therefore must conclude that we have obtained three dominant color mutations (which proved to be germinal) in the untreated descendants of mice receiving methylcholanthrene. The original mutant offspring were possibly exposed to methylcholanthrene *in utero* since their parents had been injected with this chemical before fertilization had taken place. Methylcholanthrene is known to permeate throughout the body. Several lines from these mutant black mice have been continued and tested against the appearance of induced fibroscarcomas. The brown mice of the original NHO descent had a relatively low susceptibility to induced fibrosarcomas. The three mutant blacks, however, immediately showed a tremendous increase in susceptibility to fibrosarcomas. Now all the brown descendants of these black mutant mice show the susceptibility to fibrosarcoma of the original brown stock, whereas the black descendants retain the enhanced susceptibility of the black mutants. This phenomenon of correlation between hair color and induced fibrosarcoma susceptibility to a geneticist is indicative of linkage—that is, that the gene responsible for susceptibility to fibrosarcoma induced by methylcholanthrene is carried on the same chromosome as the gene that determines whether a mouse is to have black hair or not. The suitable experiment to prove linkage and the allied genetic phenomenon of break of linkage or crossing over has been done. Complete verification of this concept has been obtained. Time alone prevents us from discussing at length these typical genetic phenomena. Many other germinal mutations involving color of hair, et cetera, have also been obtained in the descendants of mice receiving methylcholanthrene.

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*One hundred colored photographs of benign tumors and malignant cancers had been shown.

I desire to discuss briefly, with what little time there is available, some of the biological alterations or variations that have, in addition to color mutations and alterations in susceptibility to induced tumors, been obtained in the untreated descendants of mice receiving methylcholanthrene. Mention has been made of the fact that the brown subline of the NHO strain when subjected to methylcholanthrene for several generations had on the average 4.4 mice per litter. The three black mutants referred to above immediately had an average litter of 7.7 mice; and two generations beyond their descendants had an average litter size of 11.3 mice (with a range from nine to fourteen mice per litter). This is an average litter size that is far beyond any of the mice of any strain in my laboratory, where approximately a quarter of a million mice have been studied personally during a period of more than a quarter of a century. This increased fertility has been transmitted through several generations. Other lines have developed: (1) early sexual maturity, with the vaginae opening at nineteen days compared to thirty-five days in the controls, and the first litters at forty-two days of age compared to seventy-five to ninety days in their controls; (2) extremely large first litters, average 10.3 mice compared to 5.7 mice per litter, the average for the entire mouse colony (Autopsy of a forty-two-day-old mouse has disclosed the presence of thirteen embryos approximately fourteen days of age); (3) extremely rapid growth rate with the attainment of adult body size of 80 to 83 grams in some cases as compared to 25 to 30 grams for normal mice. The effects all appear to be favorable characteristics from the biological viewpoint.

More recently, however, unfavorable biological results are beginning to appear. These are increased prenatal mortality, low fertility, such as one or two mice per litter and in some cases complete sterility and precocious senility, such as cystic ovaries at 112 days of age or at the time when normal mice in the laboratory are in the prime of life. Many embryological abnormalities such as situs inversus, dextrocardia, eye lesions, internal extravasations of blood, and imperforate vaginae have recently been obtained in the same series, but at present we cannot tell completely the causative mechanisms behind their production. We do know, however, that these biological variations have not occurred among the untreated controls.

It is the general impression, however, gained after a long thought that the initial biological effect of subjecting a mixed population of mice to methylcholanthrene over a period of many generations and many years is a stimulatory one, not only in inducing many types of tumors and cancers but also other disturbances, such as increased fertility, fecundity, body size, growth rate, etc., which may be attributes of a super race of mice. If too long continued this chemical treatment will bring about the destruction of the species, either by causing cancer to arise at phenomenally early ages or producing biological changes that are incompatible with life. But we are leaving science too far behind and becoming philosophical and my time is running out.

In résumé, therefore, permit me to say that the practical application of genetic principles has produced in mice, with the help of the organic chemist, a vast supply of many of the more malignant tumors that afflict mankind at present. If the speculative imagination of a man whose hobby it is to delve into the cryptography of the alchemists of the 15th and 16th centuries has been fruitful enough to do this as well as to open up the broader problems of biological research as applied to populations, I hope you will bear with me when I express the candid opinion based upon some results already obtained and discussed this evening, that cancer, even in the human species, will eventually be controlled—by genetic

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THE EFFECT OF PROSTIGMIN IN CEREBRAL PALSY

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CEREBRAL palsy is the term now generally employed to designate the condition formerly known as Little's disease, the birth injured, spastic paralysis and cerebrospastic paralysis. The disorder is essentially a disturbance of the control of muscle function due to a fixed lesion of the brain occuring approximately at the time of birth.

The deficit in the nervous system is permanent and irreparable, hence little hope can be entertained for a cure of the disorder. On the other hand the child is a growing and developing organism potentially capable of instituting new and more complex patterns of activity. This factor is active in the child with cerebral palsy as well as the normal child. Exploitation of this natural tendency for motor development should lead to more efficient control of the muscles. Treatment has mainly been directed along the line of imitating the normal motor patterns, hoping to encourage intact parts of the brain to take over the function of the damaged parts and install new motor pathways. This type of treatment usually is a long slow process and frequently seems of little benefit.

Drugs have been found of little value for permanent relief. It is possible to reduce the spasticity and other abnormal motor activity but this does not automatically improve the child's control over the muscles. The drugs have been of two types, those acting centrally to depress the nervous system, such as the barbiturates, and those acting peripherally to block the flow of impulses at the myoneural junction such as curare. Withdrawal of such drugs has been invariably followed by return of the muscular disorder in its previous form and severity.

According to two recent reports[1,2] the drug, prostigmin, has seemed to be much more promising and worthy of consideration than have those used in the past. Schaubel[2] treated ten severe cases of spastic cerebral palsy with tetraplegic involvement over a period of eight months. Previous to beginning medication none of these patients had understandable speech and none were able to feed themselves but they accomplished these functions during the period of prostigmin medication. All had serious disability in walking but at the end of the test period six patients were walking independently and the other four needed only crutches to walk. Schaubel considered prostigmin a valuable adjunct to the training program in spastic cerebral palsy. Kabat[2] reported five cases of the spastic type of cerebral palsy to be definitely improved by prostigmin medication. Only two of the cases were reported in detail. In one of these it was mentioned that the improvement was retained after prostigmin was discontinued.

Cerebral palsy is a crippling condition of considerable importance. The Children's Bureau of the Federal Government, under which functions the program for the care of crippled children in the various states, lists cerebral palsy as second only to infantile paralysis as a cause of crippling in children. Of 289,342 children under the age of twenty-one on the registry for all causes in 1940, cerebral palsy accounted for 10.2 per cent while infantile paralysis was the cause of registration for 18.9 per cent. At the Michael Dowling School for Crippled Children in Minneapolis approximately 60 per cent of the students at the present time are afflicted with cerebral palsy. About eighty-five patients with the condition attend constantly and are under care. This includes only those who are so severely affected as to be physically unable to attend regular schools. Improvement is slow with the ordinary physical methods even in the hands of the group of highly trained personnel with which the school is staffed. Those who work with cerebral palsy are well aware of the desirability of help from any source.

The disorder of cerebral palsy has several manifestations depending upon the part of the brain harboring the lesion. The majority of the cases fall into two main groups, the spastic marked by specific muscle hypertonicity and the athetoid characterized by uncontrollable agitated movements without pattern. The spastic cases make

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From the Michael Dowling School for Crippled Children, Minneapolis, Minnesota.

The author acknowledges the assistance rendered by the staff of the School.

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up the larger percentage, but the athetoid group also constitutes a fair number of the total. A small number, probably not more than 2 or 3 per cent, consist of the ataxic, mixed and rigid types of the disorder. Many of the athetoid group have a tenseness of muscle which is considered to be an attempt to control the athetoid motions and this variation is called the tension athetoid. Many of this tension group are difficult to distinguish from the true spastic type. The tension has been considered a voluntary effort on the part of the patient to control the athetosis but undoubtedly in many instances the tension is entirely subconscious. The published reports on prostigmin[1,2] were on the spastic type of cerebral palsy.

In view of the encouraging results which have been reported on the use of prostigmin it was decided to subject a group of ten children at the Michael Dowling School for Crippled Children to a test period preliminary to administration of the drug to the entire group of children with cerebral palsy. Five typical cases of the spastic type were selected on the basis of age range, being six, nine, ten, fourteen and eighteen years old, respectively. Details of these cases are given in the accompanying reports. The other five cases selected for trial were of the tension athetoid type, being seven, eight, nine, sixteen, and seventeen years old, respectively. It was felt that the athetoid group would serve as a control to some degree since relief of the tension should allow the athetosis to become more manifest, although no information was available as to the effect of prostigmin upon the athetosis element itself. It will be noted in the table that most of the children had been under treatment at the school for a number of years. The condition of each child was well known and the rate of improvement under ordinary physical methods had become definitely established.

The abilities of each of the ten children were carefully noted at the beginning of the test period and recorded on a special achievement scale chart. This chart listed activities beginning with the simple ability to turn over or sit up and progressed through increasingly complex activities such as skipping or hopping and catching or throwing a ball. Specimens of handwriting were collected. Voice recordings were made to study rate and volume of speech as well as clarity. Moving picture records were made of selected activities common to the age group under observation such as standing, walking, eating, dressing, and piling blocks. The type of data outlined above was collected at regular intervals for study of progress. Upon completion of the test period of six months, additional information was sought through a questionnaire addressed to various persons who had had contact with the child, such as the parent, school teacher, bus driver, and room attendant as well as those directly in charge of treating the patient such as the physiotherapist, speech clinician, and the occupational therapist. Where the child was old enough to be reliable an opinion was sought directly from the child as to the effect of the drug.

The daily program of care and treatment of the children was not changed in any way except for the administration of the drug. The dosage of prostigmin administered was that used by Schaubel[2], given by the oral route as follows:

Children under age 8—Prostigmin bromide 15 mgs. once daily; atropine sulfate 1/600 gr. once daily.
Children age 8 to 12—Prostigmin bromide 15 mgs. twice daily; atropine sulfate 1/300 gr. once daily.
Children over age 12—Prostigmin bromide 15 mgs. three times daily; atropine sulfate 1/200 gr. once daily.

Prostigmin is a synthetic drug whose physiological action is similar to that of the natural alkaloid physostigmine, in that its principal effect upon the body is as if the parasympathetic nervous system were being stimulated. A further action which concerns the present study is that prostigmin depresses muscle tone and reflexes and apparently inhibits the discharge of stimuli from the anterior horn cells of the spinal cord. This is the basis of its application to the treatment of spastic paralysis. An advantage over physostigmine is in the relative absence of undesirable side effects such as nausea, salivation, sweating, dyspnea, and epigastric pain. These untoward effects where they occur can be abolished by atropine without destroying the desirable action of the prostigmin, hence atropine was given in the cases under consideration in order to avoid possible undesirable symptoms from the prostigmin.

The prostigmin was well tolerated in all ten of the patients under observation. At the end of three months it was evident that there was no significant improvement in any of the cases and the dosage of prostigmin was increased by 50 per cent. One athetoid patient (No. 8) after three months of oral administration was placed on prostigmin methylsulfate by subcutaneous injection as used by Kabat[1] in his report on spastic cases.

At the end of six months a final examination and record was made of all patients, and the medication was discontinued. It was the opinion of all observers that there was no measurable objective evidence of improvement which could be attributed to prostigmin in any of the patients. One of the spastic patients and two of the athetoid group stated that they felt more relaxed while taking the drug. Two of the parents of the other spastic cases thought there was questionable improvement and one of the parents of the other athetoid cases thought the child was more relaxed. None of the patients or the parents requested continuation of the prostigmin beyond the six months experimental period although the drug was made available to all for further administration.

Summary

A group of ten children with typical cerebral palsy, eight of whom had been under physical treatment for several years, were given oral prostigmin bromide and atropine sulfate in recommended doses over a period of six months. The cases were divided between the spastic type and the tension athetoid type. No measurable objective evidence could be obtained that the medication improved the control of muscle function. Four of the patients had never learned to walk and they did not accomplish walking during the period of medication. Two additional patients who walked with crutches were not able to discard the crutches during the period of medication. Subjectively three patients reported that they felt slightly more relaxed while taking the drug and the parents of three additional patients stated that the child appeared slightly more relaxed. This effect was noted in both the athetoid and the spastic group. None requested continuation of prostigmin beyond the six months' period of observation. We have not given prostigmin to any of the other patients with cerebral palsy at the Michael Dowling School for Crippled Children.

Spastic Type

Case 1.—L. S., male, aged six. Diagnosis: Tetraplegia, moderate severity. Attendance at Dowling School prior to the outset of the test: eighteen months.

At the time of starting the prostigmin test the patient had learned to stand alone for thirty seconds and could take two steps unassisted. He was able to dress and feed himself. His speech was barely understandable.

At the end of the six months' test period, he was able to stand alone for two minutes and he would walk unaided for twenty-two steps. The speech clinician reported a slight improvement in the clarity of his speech and a reduction in the effort required to speak.

Opinion.—The child appears to have improved. However, the child was improving at the time of starting the test. His mother stated, "L. has been improving steadily ever since going to Dowling School. It is hard to say whether the drug had such a big effect or whether he is just improving from treatment." The consensus of all observers was that the rate of improvement was not accelerated by prostigmin.

Case 2.—A. G., female, aged nine. Diagnosis: Right hemiplegia, moderate severity. Attendance at Dowling School prior to the outset of the test: five years.

At the beginning of the test period the patient had very limited use of the right hand. She could assist in dressing herself but she was unable to grasp an object with her right hand. She was not able to feed herself with her right hand. Her walking was slightly affected. Her speech was normal.

At the end of the test period her condition was unimproved. The patient stated that she "felt more relaxed."

Opinion.—There was no objective evidence of improvement under prostigmin therapy.

Case 3.—B. A., female, aged ten. Diagnosis: Tetraplegia, severe involvement. Attendance at Dowling School prior to the outset of the test: six years.

At the beginning of the test period she was able to grasp with her hands but had only gross motions. She was able to feed herself and to partially dress herself. Her balance was poor. She could stand and walk only with the aid of crutches. Her speech was slightly affected.

At the end of the test period her condition was unimproved. Her parent stated that she seemed more relaxed.

Opinion.—There was no objective evidence of improvement under prostigmin therapy.

Case 4.—K. R., male, aged fourteen. Diagnosis: Right hemiplegia, moderate severity. Attendance at Dowling School prior to the outset of the test: nine years.

At the beginning of the test period the patient was able to grasp and pick up objects with his right hand but made little practical use of his hand. He was able to walk actively but tended to walk on his toes. His speech was affected by a stutter.

At the end of the test period his condition was unimproved. The patient stated that "the drug was of no benefit."

Opinion.—There was no improvement under the prostigmin therapy.

Case 5.—M. T., female, aged eighteen. Diagnosis: Tetraplegia, severe involvement. Attendance at Dowling School prior to the outset of the test: eight years.

At the beginning of the test period the patient had learned to walk with crutches a distance of 50 feet but could not stand unassisted. She was able to feed and dress herself. She was able to write and her speech was clear.

At the end of the test period her condition was unchanged. The patient stated that she felt more relaxed. The drug was "not of much benefit, however," according to her statement.

Opinion.—There was no improvement under the prostigmin therapy.

Athetoid Type, With Tension

Case 6.—M. N., female, aged seven. Diagnosis: Tension athetoid, general involvement, severe. Attendance at Dowling School prior to the outset of the test: two years.

At the beginning of the test period she was barely able to feed herself and could grasp objects only with difficulty. She was able to stand or balance only momentarily. She would attempt a step or two. She held her legs rigidly to aid herself in balancing. Her speech was fairly clear. She was not able to write.

At the end of the test period the child was able occasionally to grasp and hold a glass of water but she could not drink the water without accident. Her condition otherwise was unchanged. The parents stated that "it seems that M. is much more relaxed. She is not as restless when she sleeps."

Opinion.—There was very slight objective evidence of improvement under the prostigmin therapy.

Case 7.—D. B., male, aged eight. Diagnosis: Tension athetoid, general involvement, moderate severity, the right arm was particularly affected. Attendance at Dowling School prior to the outset of the test: three months.

At the beginning of the test period the child was quite capable. He was able to dress and feed himself. His right arm was quite tense but the patient was left handed. His gait was unsteady. His speech was unaffected. There were intermittent uncontrolled motions of his head and neck.

At the end of the test period there was no noticeable improvement. His head had fallen backward and the child had to hold his head up with his hand. The parents stated, "for a short time we noticed a distinct improvement but on the whole there has been no noticeable improvement at all."

Opinion.—There was no improvement under the prostigmin therapy.

Case 8.—K. M., female, aged nine. Diagnosis: Tension athetoid, general involvement, moderately severe. Attendance at Dowling School prior to the outset of the test: five years.

At the beginning of the test period the patient was able to partially grasp objects and to feed herself. Swallowing was difficult and her balance was very poor. She could stand alone only momentarily. She was quite tense and rigid on standing. She could walk short distances pushing a chair. Her speech was barely understandable. Her printing was legible. The athetoid movements were most noticeable on intention. She was able to dress herself.

At the end of three months of oral prostigmin therapy there was no improvement. The medication during this period from April to July 1945 was 15 mgs. of prostigmin (orally twice daily) plus 1/300 gr. of atropine once daily.

At the end of the three months' period, she was placed on prostigmin methylsulfate, subcutaneously as follows:

July—1 c.c. 1:4000 prostigmin methylsulfate plus 1/300 gr. of atropine—once daily.

August—1.5 c.c. 1:4000 prostigmin methylsulfate plus 1/300 gr. of atropine—once daily.

September—1 c.c. 1:2000 prostigmin methylsulfate plus 1/500 gr. of atropine—twice daily.

(At this time she became overdosed. She began to be listless, tired, drooled, lost interest, and would not attempt her school work. Her speech was difficult and she walked less.)

September 15, 1945—1 c.c. of 1:2000 prostigmin methylsulfate plus 1/300 gr. of atropine—once daily.

At the end of the six months' test period there was no improvement under the prostigmin therapy.

Opinion.—There was no improvement under the prostigmin therapy.

Case 9.—P. M., male, aged sixteen. Diagnosis: Tension athetoid, general involvement, severe. Attendance at Dowling School prior to the outset of the test: seven years.

At the beginning of the test period he was able to partially feed himself but he could not drink liquids. He was barely able to grasp objects. He could not dress himself. He was able to walk 25 feet but had severe tenseness. He had writhing movements at times in an attempt to control his limbs. His speech was fairly good. His writing was illegible. He was able to use the typewriter.

At the end of the test period his condition was unchanged. The patient stated that he felt "slightly more relaxed."

Opinion.—There was no objective evidence of improvement under the prostigmin therapy.

Case 10.—E. P., female, aged seventeen. Diagnosis: Tension athetoid, general involvement, severe. Attendance at Dowling School prior to the outset of the test: eleven years.

At the beginning of the test period the patient was unable to dress herself, feed herself, or care for her toilet. Severe tenseness prevailed over her entire body with occasional severe writhing movements. She was not able to stand but attempted to walk when supported under her arms. Her speech was involved but it was understandable. She was not able to write.

At the end of the test period her condition was unimproved. The patient stated that she felt less tense and had better control of her hands. The parents did not notice any improvement.

Opinion.—There was no objective evidence of improvement under prostigmin therapy.

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MALARIA

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PRIOR to World War II, malaria in many sections of the United States was of infrequent occurrence. From 1930 to 1944 an average of three cases of malaria per year were admitted to this hospital, exclusive of therapeutic malaria. During 1945 there were 154 separate cases of malaria admitted. This increase was due entirely to the return of veterans from malarial regions. Many did not know they were harboring the malarial parasite at the time of their discharge as they had received prophylactic doses of atabrine while in service and only after this drug was discontinued did the disease become manifest.

The purpose of this paper is to present a few examples of how malaria may complicate other diseases, and, conversely, how other diseases may complicate malaria, in the hope that other physicians, who have not been as fortunate as we in seeing a fairly large number of malarial patients, may be benefited.

Other Diseases Complicated by Malaria

Case 1.—R. C. D., a white man, aged thirty-five, was admitted to this hospital October 18, 1945, for the treatment of malaria. The history revealed service in the Southwest Pacific during which he had malaria and amebic dysentery. He recovered and was subsequently discharged because of accumulated points. Ten days prior to admission he developed diarrhea and pains in the left upper quadrant of the abdomen, accompanied by irregular chills, fever and sweats. He was acutely ill on admission with a temperature of 102 degrees. The only significant physical finding was marked tenderness and muscle spasm in the left upper abdominal quadrant. No definite splenomegaly could be ascertained. A blood smear for malarial parasites was negative at this time. The white blood count was 13,000 with 81 per cent polymorphonuclear cells. The red blood count was 4,000,000 with hemoglobin 86 per cent. Blood cultures, urinalyses and liver function studies were accomplished with negative results. Repeated studies of the stool for amebae were negative. His febrile and toxic course did not abate. None of the laboratory studies revealed any significant abnormalities except for the gradual development of a hypochromic, microcytic anemia. A small mass became palpable in the epigastrium which was thought to be contiguous with the liver. A diagnosis of amebic abscess of the liver was made and emetine hydrochloride therapy by the parenteral route was started. On November 21, 1945, an exploratory laparotomy was done which disclosed an abscess located on the anterior surface of the left lobe of the liver. This was drained and packed. The characteristics of the pus were typical of an amebic abscess but no organisms were recovered. Neither were amebic cysts found in a biopsy specimen removed from the wall of the abscess. Daily irrigations of the abscess cavity with 1:1000 emetine hydrochloride were administered and the patient's course was very gratifying. On November 25, 1945, he suffered a chill with a temperature of 103.4. A blood smear revealed plasmodium vivax. Response to atabrine therapy was prompt. The patient made an uneventful recovery.

Case 2.—U. W. P., a colored man, aged twenty-five, was a veteran of the Northern Burma campaign. He was discharged because of accumulated points, September 1, 1945. On the day of his discharge he suddenly developed severe upper abdominal cramping pains with associated nausea. He had two bowel movements but the stool appeared normal. There was an increase in his symptoms for the next five days and he was admitted to this hospital, September 7, 1945. There was no past history of gastro-intestinal disturbance and his past history had been negative for any serious illness. On admission the patient was acutely ill. He was in severe pain, rolling and tossing in bed. He lay with his knees flexed on his abdomen. He was perspiring freely. The temperature was 99.2, the pulse was 100, and the respirations were 20. There was marked rigidity of the abdominal muscles in the upper half of the abdomen with marked tenderness. There was also fullness across the upper abdomen. The lower abdomen was soft. No jaundice was noted. Rectal examination was negative. The white blood count was 20,950 with 80 per cent polymorphonuclear cells, 15 per cent lymphocytes and 5 per cent monocytes. A smear for malaria was negative at this time. A scout film of the abdomen was negative. The urinalysis was negative. It was thought by the Surgical Service that an exploratory laparotomy should be done because of the possibility of a perforating duodenal ulcer. At the operation the only finding was an enlarged liver and spleen. The liver was firm and there were nodulations over the surface. A biopsy was taken. The postoperative course was uneventful until September 22, 1945, when the patient developed diarrhea. Stool examination showed Endamoeba histolytica and the biopsy of the liver showed amebic hepatitis. He was placed on emetine and later carbarsone with excellent clinical response. On October 14, during his convalescence, he suddenly had chills and fever and a blood smear was found to be positive for plasmodium vivax. Therapy

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From the Medical Service, Veterans Hospital, Dayton, Ohio. Published with the permission of the Acting Surgeon General of the Veterans Administration who assumes no responsibility for the opinions expressed or conclusions drawn by the authors.

with atabrine gave prompt results. He was discharged November 5, 1945.

Case 3.—H. E., a white man, aged twenty-five, was a veteran of the South Pacific area, and was on atabrine as prophylaxis against malaria during his overseas tour. While overseas he had diarrhea with blood, mucus and purulent material in his stools and Endamoeba histolytica was found on stool examinations. He apparently completely recovered and in November, 1945, was discharged because of accumulated points. One week prior to his admission to this hospital he had recurrent diarrhea with blood, mucus and pus noticed in his stools. He also complained of weakness and had a low grade fever. Examination of the stools showed Endamoeba histolytica, and sigmoidoscopic examination showed ulcers typical of amebic dysentery in the colon. He was placed on diiodoquin therapy and was convalescing satisfactorily with marked regression of symptoms for three days when he suddenly began to chill, elevation of temperature was noted, and profuse perspiring was present. Smears taken immediately were positive for plasmodium vivax malaria. He was placed on atabrine in addition to the diiodoquin and his response and course were uneventful thereafter.

Comment.—These three cases illustrate the frequent association of amebic dysentery with malaria. In addition these patients during their convalescence from amebic dysentery developed chills and fever as a complication. In such cases, unless doctors are malaria-conscious, such incidents will cause considerable alarm. This may result in many expensive diagnostic examinations in an attempt to discover the etiology of the complicating chills and fever, when a simple blood smear would immediately establish the etiology.

Case 4.—C. J. D. a white man, aged twenty-eight, was a veteran of the South Pacific. He was admitted March 4, 1945, with a history of epigastric pain occurring one and one-half hours after meals which was relieved by food and amphojel. Nausea, vomiting, tarry stools and weakness had been noted for three months. Study revealed a duodenal ulcer, and proglottids of Taenia saginata were found in the stool specimens. On ulcer regimen he continued to feel weak and listless. A few days later he developed chills and fever. Since we were aware of the frequency of malaria complicating other diseases, blood smears were examined. They were positive for plasmodium vivax. Appropriate therapy with atabrine, in addition to ulcer regimen, resulted in complete recovery.

Comment.—This case is an example of malaria developing as a complication in a patient under therapy for active duodenal ulcer. The chills and fever developed suddenly and unexpectedly. It is of further interest that three distinct disease entities coexisted.

Case 5.—C. E. W., a white man, aged twenty-one, was a veteran of the North Africa and Italian campagain. His past history was essentially negative. He was on atabrine as prophylaxis against malaria while on duty overseas. He became acutely ill about three days prior to admission to this hospital with a history of sore throat, headache, vomiting, leathargy and fever. On physical examination he appeared acutely ill. His temperature was elevated. His throat was inflamed. His neck was stiff and the Kernig test was positive. A spinal tap was done and grossly purulent spinal fluid was obtained. The patient was treated with sulfadiazine and penicillin and had a satisfactory convalescence. The etiological organism of the meningitis unfortunately could not be demonstrated by the laboratory. During his satisfactory convalescence, approximately twenty-one days after admission, the patient suddenly had chills followed by a fever of 102.4. A relapse of his meningitis or some complication of his meningitis was immediately suggested, but the medical staff was alert to the possibility of malaria suddenly appearing in a young veteran who had served in a malaria-infected region of the world during the war and a blood smear was made which proved to be positive for plasmodium vivax. On atabrine therapy his future course was uneventful.

Case 6.—A. C. McN., a white man, aged thirty-four, was admitted, January 4, 1946, for treatment of pneumonitis. He had been ill at home for about one week prior to admission with fever, pain in the right chest, and a cough. He was seen by his private physician and placed on one of the sulfonamides. There had apparently been marked improvement with the sulfa therapy although the pain in the right chest persisted. He was afebrile on admission to this hospital. A chest x-ray showed changes indicative of an inflammatory process involving the right lower and right upper lung fields. The physical signs indicated consolidation in the right lower lobe area posteriorly. The veteran's convalescence was uneventful with gradual clearing of the physical signs and improvement in well-being. However, on January 23 a chill developed and temperature rose to 104 degrees. Blood smear taken promptly revealed plasmodium vivax. Atabrine therapy was instituted at once and a satisfactory clinical response was effected.

Case 7.—L. J. W., a white man, aged twenty-three, was admitted December 7, 1945. He had been stationed in the Southwest Pacific area for twenty-eight months. Since March, 1945, he had five attacks of malaria, each one responding promptly to quinine or atabrine therapy. However, weakness persisted during the intervals between relapses and progressive loss of weight occurred. At the same time diarrhea consisting of five or six loose, bulky, foul and frothy stools daily made its appearance. He had lost fifty-five pounds since March, 1945, and had developed burning and soreness of his mouth and tongue. Abdominal cramps had not been noted at any time. On admission the veteran was very weak, poorly nourished and poorly developed; temperature 98, pulse 120, respirations 20. Signficant findings included pallor, emaciation, smooth red tongue, tenderness in left upper abdominal quadrant and slight enlargement of the spleen. Within a few hours after admission he suffered a chill with temperature rise to 102.4 degrees. Plasmodium vivax was demonstrated in the blood and the routine course of atabrine was instituted. No subsequent febrile episodes occurred. The red blood count on admission was 1,410,000 with 31.3 per cent hemoglobin. The white blood count was 2,030 with a normal differential. The glucose tolerance test revealed a flat curve. Stool studies were not significant except for the negative finding of fat with sudan III stain. Gastric analysis revealed absence of free hydrochloric acid in the fasting specimen with maximum free acidity of twenty-six units 45 minutes following histamine stimulation. Blood chemistry was normal including a blood calcium of 11 mgms. and a blood sugar of 101 mgms. Gastro-intestinal series revealed no abnormality. A diagnosis of sprue was established and treatment with an initial whole blood transfusion, liver extract, vitamin B complex, high carbohydrate and low fat diet was instituted. The bulky diarrhea ceased, rapid improvement in the blood picture took place, and remarkable weight gain and recovery of well-being occurred. He had gained thirty-three pounds at the time of his discharge on January 19, 1946. The blood count on this date was 4,210,000 RBC with 85 per cent hemoglobin and 11,000 WBC with a normal differential count.

Comment.—This case illustrates that the response to atabrine therapy when administered promptly, in the treatment of a relapse of malaria, should be complete if the malaria is uncomplicated. Not only should the fever, chills and malaria subside promptly, but also the weakness and lassitude that go with the acute relapse. With persistence of symptoms of any kind between well treated relapses, it is imperative to search carefully for some other disease entity. In this case the severe anemia, if not studied carefully, could easily have been interpreted as being caused by the malaria. However, the history of bulky, foul diarrhea supported by the laboratory findings established the diagnosis of the sprue syndrome which explained the persistence of chronic ill health between the relapses of malaria.

Case 8.—F. S., a white man, aged thirty-seven, a veteran of the South Pacific, received atabrine as prophylaxis against malaria while in this section. He was discharged from service because of accumulated points and five days later developed chills, fever, and cough with expectoration of mucopurulent material. He was admitted to this hospital on November 3, 1945. On admission pneumonia was suspected but an x-ray of the chest was negative. The urine was negative. The red blood count was normal. The white blood count was 10,000 with 79 polymorphonuclear cells, 20 lymphocytes, and 1 eosinophile. A smear for malaria was positive for plasmodium vivax. He was placed on atabrine and his temperature returned to normal and for two or three days he appeared much improved. At this time a low grade fever appeared and he developed pain in the lower right chest on deep breathing with weakness and generalized aching. A repeat x-ray of the chest showed increased density in the right lower lung field consistent with pneumonia. He was placed on penicillin and his recovery was uneventful, with the chest lesion slowly clearing.

Case 9.—H. W., a white man, aged twenty-seven, was a veteran of the Italian campaign. He was admitted to the hospital with a history of chills and fever of two weeks' duration. In addition he complained of abdominal cramping pain with occasional vomiting attacks since the onset of his illness. No blood was ever noted in his vomitus, and no black tarry stools had been noted. The abdominal distress was usually relieved somewhat by alkalis and was most noted when his stomach was empty. On admission the red blood count was 2,100,000 with 46 per cent hemoglobin. A smear was positive for plasmodium vivax. He was placed on atabrine and his fever rapidly subsided. His anemia improved on iron and adequate food intake but he continued to have abdominal distress. A gastro-intestinal x-ray study was done and evidence of a duodenal ulcer was found. Ulcer regimen was instituted and the symptoms related to his malaria and ulcer responded satisfactorily.

Malaria Mistaken for Other Diseases

Case 10.—D. L., a white man, aged thirty-two, a South Pacific veteran, was admitted to this hospital with a history of chills and fever, a cough, a pain in the left chest, and a sore throat. On admission his temperature was 104.2. He appeared acutely ill and toxic. He coughed frequently. The throat was red and injected. He was thought to have acute tonsillitis and possible pneumonia. He was placed on sulfonamide therapy for these provisional diagnoses. An x-ray of the chest was negative and no clinical response was noted with the sulfonamides. Blood smears were taken and plasmodium vivax was found. The sulfonamides were discontinued and treatment with atabrine resulted in prompt recovery.

Comment.—This case illustrates how frequently patients are placed on either sulfa or penicillin without a careful study as to the etiology of the fever and other related complaints. It also illustrates how malarial infection may be masked in its presentation of symptoms and findings.

Case 11.—G. W. B., aged twenty-nine, a white veteran of South Pacific, received atabrine as prophylaxis against malaria while serving overseas. He developed abdominal pain with cramps and vomiting while in the tropics and was returned to the States. After diagnostic studies were made he was separated from service with a diagnosis of gastritis. He continued to have the above complaints plus chills and fever, and was admitted to this hospital on September 16, 1945. The red blood cell count was 2,921,000 with the hemoglobin 66 per cent, and the white blood count was 6,250. The urinalysis was negative. A smear for malaria was positive for plasmodium vivax. He was placed on atabrine therapy with complete relief from his symptoms resulting. He was discharged free of symptoms on September 26, 1945.

Comment.—This is an interesting case showing the atypical course that malaria may take. This patient was thought to have chronic gastritis. His symptoms were not those usually seen in malaria. However, a smear for malaria was positive and all symptoms completely disappeared on treatment with atabrine.

Case 12.—L. P. B., a white man, aged twenty-six, was a veteran of the South Pacific. He was discharged from the Army, June 10, 1945. On July 2, 1945, he developed a sore throat, chills and fever. The family physician was consulted and the patient was treated for "Strep throat" with sulfa tablets. He did not improve, and he became weaker and continued to have chills every other day. He was admitted on August 2, 1945, to this hospital. The red blood count at this time was 1,430,000 with 30 per cent hemoglobin, and the white blood count was 3,350 with 57 per cent polymorphonuclear cells, 40 lymphocyte, and 3 monocyte. Marked anisocytosis was noted on the blood smear. He was transfused and given iron and atabrine with other general supportive care. His recovery was complete and uneventful.

Comment.—This illustrates how a patient may be carried for weeks with an erroneous diagnosis. Not until a severe anemia occurred and the patient became very weak and quite ill was a smear for malaria made. Considering the entire course of his illness and the time required for him to regain his health, many weeks of work were lost by this patient which could have been avoided if malaria had been considered earlier.

Conclusions

1. When a physician encounters a veteran with chills and fever who has had service in a malarial region, he should consider the possibility of malaria, amebiasis and other tropical diseases.

2. In cases of trauma, surgery or other illness in veterans of World War II when the clinical course is complicated by chills and fever, malaria should always be excluded. From our experience we find this is not infrequent and presents a problem to all sections of the country. Many expensive and time-consuming laboratory studies may be avoided in such instances if physicians are malaria-conscious.

3. When the course of malaria is complicated by diarrhea, amebiasis should be excluded since amebic dysentery and malaria are frequently found coexisting in the same patient.

4. Atabrine and quinine do not cure vivax malaria and recurrent attacks are common and frequently bizarre. The interval between recurrent attacks may be only a few days.

5. Blood smears are easily done and should properly precede therapy with atabrine or quinine.

6. The coexistence of malaria with other diseases constitutes a challenge to the diagnostic acumen of the medical profession and presents a very interesting problem.

MEN, MICE, MALIGNANCY

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principles. I do not mean by some utopic eugenic practice, but by the discovery of the mechanism within the animal body which produces resistance to cancer in all its phases. When this is ascertained and completely understood, we are justified in hoping that this principle will control human cancer.

In closing, I would like to leave you with two quotations. One is by Walt Whitman: "And a mouse is miracle enough to stagger sextillions of infidels." Robert Burns probably did not have cancer in mind, but he may very well have had when he said, "The best laid schemes o' mice and men, gang aft a-gley."

MALARIA IN MINNESOTA

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ONE who reads the early medical literature of Minnesota will see frequent reference to 'malaria" and "typhoid-malaria." While he will be unable to differentiate those cases which were ndigenous to the state from those in which the patient arrived by way of the river traffic, the belief is generally held that there were many "native" cases. With the lessening of the importance of the Mississippi River as a means of passenger transportation and with the clearing of lands and draining of swamps, and perhaps as a result of unknown factors, malaria has almost disappeared from the state, although in some years, from one to five persons have contracted the disease in Minnesota.

Following World War I there was no appreciable rise in reported cases. However, in 1919 n the vicinity of Red Wing and Bay City there were eleven clam fishermen who contracted the disease. With renewed activity on the river in the middle thirties, malaria again visited Minnesota and its sister state Wisconsin. From 1935 to 1937, nclusive, there were twenty-two cases reported, of which eleven were indigenous. In 1938 there were eight, of which three were indigenous, and in 1939 there were twenty-three cases, of which twenty-one were indigenous. The number of cases n Wisconsin was comparable and reached a high in 1939 with twenty-eight cases. Most of these cases were found along the river from Wabasha, Minnesota, to LaCrosse, Wisconsin. In 1940, thirteen cases, with four indigenous ones, were reported, and in 1941, nine cases were recorded.

A survey, during these years, conducted under the auspices of the U. S. Public Health Service and the State Boards of Health of Minnesota and Wisconsin, revealed the interesting fact that owing to flooding of land near the river and the retention of these swamps throughout the summer and early fall and owing to cutting of trees which let in sunlight, an enormous breeding area for Anopheles had developed. Of the larvae captured, 57.4 per cent were Anopheles quadrimaculatus, the chief transmitter of malaria in the United States. Catching adult mosquitoes in this area disclosed that Anopheles quadrimaculatus was the predominant mosquito.

As the victims were diagnosed and treated, as the severe winters took their toll of infected mosquitoes and as the workers on the dams returned to their Southern homes, removing most of the reservoirs of infection, malaria again receded in the state. Now, with the returning service and other overseas personnel, malaria and Minnesota again become an important combination.

During the present war years the following number of cases have been reported: 1942, one, which was indigenous; 1943, seven cases; 1944, sixty cases, and 1945, three hundred and sixty-six cases. None of these in the last three years has been indigenous; however, one person contracted the disease as a result of a transfusion from an ex-serviceman. Since 1912 there have been fourteen deaths reported as being caused by malaria, and fifty-six indigenous cases.

No one will ever know just how many military and other personnel connected with the war effort contracted malaria. Not all cases occurred among overseas personnel, for many cases occurred in our southern camps. From very incomplete data one may expect something on the order of 1,000 cases to occur in Minnesota over a peak period of two or three years. Many of these persons will have their first attack in the state, because the suppressive treatment with atabrine was highly effective. Others will be noted when having one of their relapses, so common in cases of tertian and quartan malaria. Fortunately, few cases of estivo-autumnal malaria (falciparum malaria) will be encountered, for the long suppressive regimen will have cured almost all of these infections.

Physicians should remember that thousands of persons other than military personnel were overseas for long periods and when symptoms suggestive of malaria appear in any of these, examination of the blood should follow promptly. Rarely is treatment justified before a diagnosis has been established; diagnosis is best accomplished by examining thick smears and indeed this method is imperative. This is a specific technical procedure and frequently is the only means of making

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a positive diagnosis. Once the diagnosis has been established, treatment should be begun at once.

Many drugs have been tested. While a new and better one may be forthcoming, at present atabrine (quinacrine hydrochloride) is the drug of choice. A new drug, SN7618(7-chloro-4-[4-diethylamino-1 methylbutylamino] quinoline) and other compounds have been announced as being superior to atabrine, but it will be some time before they are generally available and accepted. Plasmochin does not offer any advantage in treatment and should not be used, as a rule.

In uncomplicated cases, two tablets of atabrine (0.2 gm. or 3 grains) should be given orally every six hours night and day for five doses (total 1.0 gm.), followed by one tablet (0.1 gm. or 1½ grains) three times a day after meals for six days (total 2.8 gm. of atabrine in seven days).

In cases in which there is severe vomiting or when the patient is unable to retain orally administered medicine, two ampules of atabrine (0.2 gm. each) in 5 c.c. of sterile water may be given intramuscularly, one in each buttock. If necessary, one or two additional doses of 0.2 gm. (one ampule) may be given at intervals of six to eight hours. Oral medication should then be resumed as soon as possible, the total dosage for the first forty-eight hours being 1.3 gm. Thereafter one tablet (0.1 gm.) should be given three times daily for five days (total dosage 2.8 gm.).

In a few instances, the dose of atabrine by mouth may not be tolerated. In these cases, quinine should be used. Likewise in a case in which there are unusually severe symptoms, quinine may control the attack more rapidly than atabrine. If the patient can retain quinine that has been administered orally, give 10 grains (0.65 gm.) of quinine sulfate three times a day for four days and 10 grains (0.65 gm.) daily for six more days. If orally administered medicine cannot be retained, give quinine intravenously (10 grains or 0.65 gm. of the dihydrochloride in 300 to 1,000 c.c. of isotonic saline solution). This may be repeated in six to eight hours. There is no advantage in parenteral administration of either atabrine or quinine if the patient can retain the drug when it is given orally.

If quinine is first used intravenously because of the severity of the attack and not because of intolerance to atabrine, the latter is given intramuscularly at the same time (0.2 gm.) and the usual course of 2.8 gm. of atabrine is completed as previously described.

Cerebral malaria may occur as the first attack of Plasmodium falciparum (malignant tertian) malaria. This type of malaria will be encountered very infrequently. In such cases 10 grains (0.65 gm.) of quinine dihydrochloride in 300 to 1,000 c.c. of isotonic saline solution should be given intravenously at once and repeated for one or two doses at intervals of six to eight hours. Oral administration of atabrine or quinine is started at the same time or as soon as the patient can ingest any medicine.

Although the hazard of inoculating a patient with malaria during the act of blood transfusion has increased greatly since the return of so many persons who have been in malarious areas, the possibility of a disastrous effect on the patient is not great so long as physicians are alert to the possibility. Persons acquiring malaria by this means respond readily to moderate treatment and as a rule do not have a relapse.

In spite of these remarks, there is no justification for chancing an inoculation of malaria by not taking suitable precautions.

It is possible to use malarious blood for transfusion of patients if the blood can be held for about ten days before using. This time will allow for the death of the parasites. However, if this is not possible, the following general rules may serve as a guide:

Rule 1. If the prospective donor has been in a malarious area and has had an attack of malaria, he should not be used as a donor for at least two years after leaving the zone, provided that he discontinued suppressive treatment (atabrine or quinine) then and has not had any recurrences of malaria for at least two years previous to his donation. Before donation a thick smear should be examined and found to be negative.

Rule 2. If the prospective donor has been in a malarious area and has not had any attack of malaria and for the past year has not taken any suppressive treatment, he may be used, provided a thick smear does not reveal any parasites. The history of undiagnosed fever or a questionable history should cause the application of rule 1.

Even these rules may not prevent an occasional transfer of the disease but they are considered sufficient to serve as general rules. If about a week

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CYSTIC FIBROSIS OF THE PANCREAS

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THE purpose of this presentation is to call attention to a clinical entity which, though adequately described only recently, is encountered with surprising frequency in the practice of pediatrics. Eight typical cases of this disease, cystic fibrosis of the pancreas, have been selected from those observed at the University of Minnesota Hospitals during the past few years to illustrate its known clinical and roentgenological characteristics.

Since one of the principal characteristics of the disorder is the occurrence of an excess of fat in the stools, it must be distinguished from the more familiar "celiac disease," or idiopathic steatorrhea, with which it was formerly confused. Children suffering from either of these conditions present the same clinical characteristics of bulky stools, enlargement of the abdomen, and signs of nutritional deficiency. Those with cystic fibrosis of the pancreas, however, actually suffer from a generalized disorder, one of the striking manifestations of which is chronic disease of the respiratory tract.

The co-existence in certain children of severe respiratory infection and a celiac-like picture was first described in 1913 by Garrod and Hurtley.[9] The first observation of pancreatic disease in these children was made in 1919 by Passini[14], who described the typical findings of cystic fibrosis of the pancreas in a child who had had abnormal stools since birth, and who died of bronchopneumonia at the age of nine months. A similar pancreatic lesion was found in a sibling of this child who died during the second month of life.

Sporadic reports of this coincidence of steatorrhea with respiratory and pancreatic disease continued to appear in the literature until 1938, when Andersen[2] published a series of forty-nine pathologically proved cases of cystic fibrosis of the pancreas, twenty of which she had found among the material of 605 autopsies at Babies' Hospital in New York City. Andersen classified these into three groups according to the period of their survival. In 10 per cent of the children death occurred within a few days of birth due to obstruction of the intestine by an unusually viscid meconium. Sixty per cent of the infants developed respiratory infections, and died before the age of six months. The remaining 30 per cent survived for longer periods with a uniform coincidence of chronic respiratory disease and malnutrition. The surprising incidence of this supposedly rare condition was later verified by Farber[8], reporting the autopsy findings of eighty-seven cases. Smaller series were reported by Snelling[17], Daniel[7], and Shohl.[16]

Etiology

The etiology of this condition remains obscure. Accumulated evidence is much in favor of its congenital origin in the great majority of children. In many instances the condition is obviously present at birth. It frequently occurs in several siblings. Kennedy and Baggenstoss[12] described a typical patient having cystic fibrosis of the pancreas, five of whose eight siblings died before the age of eight months with the symptoms of chronic cough and diarrhea.

The atrophy and cystic degeneration of the exocrine parenchyma of the pancreas, and the increase in its interstitial fibrous tissue are found to be proportionate to the degree of occlusion of the duct system of the pancreas, and are probably secondary to it. Andersen has interpreted this occlusion as an anomaly of development. She suggested that the nutritional deficiency incident to the loss of pancreatic function is the cause of the other manifestations of this disease. The severity and chronicity of the respiratory infections were related particularly to a deficiency of vitamin A.

The absorption of vitamin A is also impaired, however, in children with the classical celiac disease. This latter category of patients has a greater than normal susceptibility to minor respiratory infections, but there is an obvious distinction in the severity and chronicity of the respiratory disease as it occurs in each of these two conditions. Andersen[2] has placed much emphasis upon the hyperkeratoses which she has found in some of these patients as an evidence of a deficiency of vitamin A. Farber[8] was able to find such changes in but

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a few instances in his larger series of postmortem examinations of these patients.

The most acceptable explanation so far offered is that of Farber[8], who points out that the secretions of all of the mucous-secreting organs of these patients are characteristically viscid, and that the mechanical obstruction caused by these secretions is probably primary to the cystic changes in the pancreas, and is a prominent factor in the development of pneumonia. Obstruction of the respiratory system is now known to play a primary role in the pathogenesis of many pneumonias.[1]

TABLE I. NUTRITIONAL LOSS IN STEATORRHEA

Ingested Food	Fecal Loss	Clinical Manifestation
Neutral fat.....*Fatty acids and soaps		Large, odorous stools Protruberant abdomen Caloric deficiency
Carbohydrates*	Significant loss only in exacerbation	
Proteins*		
Fat-soluble vitamins		
Vitamin A	+ —	Keratoses (infrequent)
Vitamin D	+ —	Osteoporosis, rickets
Vitamin K	?	No evidence of deficiency
Vitamin E	?	
Water-soluble vitamins		
Vitamin B	?	
Vitamin C	?	
Minerals		
Calcium ....Soaps (insoluble)	+	Osteoporosis, rickets
Iron ....Soaps (insoluble)	+	Hypochromic anemia
Sodium ....Soaps (soluble	Significant loss only in exacerbation	
Potassium ....Soaps (soluble		
Water		

*Digestion impaired in cystic fibrosis of the pancreas, with loss of unsplit fats, carbohydrates, and proteins.

The loss of various dietary factors which occurs in steatorrhea of any form is summarized in Table I. Comparative studies of the nutritional loss in ideopathic steatorrhea and that associated with cystic fibrosis of the pancreas have yielded variable results. It may be stated that in general there is an increased fecal content of partially digested lipids, proteins, and carbohydrates, in this latter entity.

The steatorrhea found in these patients is analogous to that described by Vermeulen, Owens, and Dragstedt[19], and by Coffey and Mann[6] in depancreatized dogs. In carefully controlled metabolic experiments it was found that these animals suffered an increased loss of fecal fats, both whole and hydrolyzed, with a smaller and more variable loss of protein and carbohydrate.

Clinical Characteristics

A part of the relevant data on the eight patients selected to illustrate this discussion is summarized in Table II. The classification suggested by Andersen has been followed in this table.

The clinical picture of the newborn infants having meconium ileus is entirely different from that of older children with cystic fibrosis of the pancreas, though the autopsy findings are similar. These infants have the typical clinical evidences of intestinal obstruction, with abdominal distention, vomiting, and absence of stools. Surgical exploration reveals an elongated mass of adherent gelatinous meconium occluding a portion of the lower intestine, which is collapsed distally to this site. These infants usually expire from meconium peritonitis or pneumonia within the first few days of life.

A summary of the essential data in a typical case illustrating this group follows:

Patient D. R. was born of a normal pregnancy. The birth weight was 8 pounds, 7 ounces. No meconium was released per rectum. Persistent vomiting developed shortly after birth, an abdominal distention appeared at twelve hours of age. The patient was admitted to University Hospital on the second day of life.

This patient was the fifth child, and two siblings were living and well. One sibling had intestinal obstruction which was relieved spontaneously on the third day of life, but an alimentary disturbance, with episodes of vomiting, persisted. The child died of pneumonia at the age of three months. The fourth sibling also had an intestinal disturbance, with passage of bulky stools. She developed a chronic cough at the age of three months, and died of pneumonia at four months.

By digital examination, the rectum was found to have a very small lumen. An x-ray film of the abdomen showed the stomach and intestine to be markedly distended. A laparotomy was performed on the third day of life. The distal ileum was found to be distended with viscid meconium, and the colon collapsed to a mean diameter of 5 to 7 millimeters. An ileostomy was performed. The patient developed persistent respiratory difficulty with cyanosis and died on the fourth day of life.

TABLE II

Patient Age at Observation	Nutritional State	Size of Abdomen	*Steatorrhea* Char. of Stools	Fecal Fat (% Dry Weight)	Respiratory Infections	X-ray Findings in Chest	Duodenal Aspir. (Trypsin Activ.)	Sibling History
Group I								
1. D.R.* 3-4 day	"Good"	....	....	....	....	—	....	2d. pneumonia *(1) in infancy
Group II								
2. S.S.* 4 mo.	"Well nourished"	....	Bulky, odorous	....	Pneumonia at 3 mo.	+	....	1—d. pneumonia in infancy* 1—normal
Group III								
3. M.M.* 5-11 mo.	"Markedly thin"	Large	Bulky, odorous	35	Pneumonia at 5, 8, 10 mo. Chronic cough	+	Absent	1—d. pneumonia in infancy 1—chronic cough 1—"celiac disease" 1—rickets 3—normal
4. J.G. 3-12 mo.	"Emaciated"	Large	Bulky, odorous	....	Persistent "colds"	—	Absent	3—normal
5. E.S.* 3 yr.	"Markedly undernourished"	Large	Bulky, odorous	38	Pneumonia at 6 mo. 2 yr.* Chronic cough.	+	....	2—d. pneumonia in infancy
6. P.N. 4-5 yr.	"Undernourished"	Large	Bulky, odorous	45.1	"Colds," pneumonia at 2 yr.	+	Absent	2—normal
7. D.S. 5-6 yr.	"Emaciated"	Large	Bulky, odorous	53	Bronchitis at 1½ yr. Chronic cough.	+	Absent	2—normal
8. J.J. 6-7 yr.	"Emaciated"	Large	Bulky, odorous	++++ (stain)	Pneumonia at 6 yr. Chronic cough.	+	Absent	No siblings

Autopsy revealed an increased amount of thick mucus in the bronchi and bronchioles. Microscopic study of the pancreas revealed a striking degree of atrophy of the exocrine parenchyma and an apparent increase in the amount of connective tissue. The small and large ducts were dilated and filled with homogeneous eosinophilic material which histologically had the appearance of inspissated secretion.

Andersen's differentiation of the second and third groups of these patients is based upon their survival for less or more than six months. This division is somewhat arbitrary. A typical example of the patient in each of these categories follows:

Patient S. S. was admitted to the University Hospital at the age of four months with a history of chronic cough, difficult feeding and weight loss of two weeks' duration.

The patient had one well sibling. A previous child had died at the age of seven months after a similar episode of chronic cough and digestive disturbance. Postmortem examination of this sibling revealed bronchopneumonia and the characteristic findings of cystic fibrosis of the pancreas. The family history was otherwise non-contributory.

At the time of the patient's admission the physical findings were essentially negative, except for the observation of a mild dyspnea and the presence of coarse râles distributed diffusely over the lung fields. During the three weeks of hospital care the chronic cough increased and became paroxysmal in nature. The respiratory difficulty was progressive, with the development of severe inspiratory retraction and persistent cyanosis. Successive chest roentgenograms revealed a persistent emphysema, with increasing bronchial markings suggestive of bronchitis or bronchiectasis. Direct laryngoscopy disclosed no significant pathology. Sulfadiazine therapy, intravenous aminophyllin and steam were of no benefit. Despite continuous administration of oxygen, the child expired.

Autopsy revealed a large amount of muco-purulent material in the bronchial tree. Microscopic examination of the lungs demonstrated a moderate bronchiectasis and a severe peribronchial pneumonitis. (Fig. 3). The pancreas showed an early typical cystic fibrosis (Fig. 2).

Patient J. J. had been chronically ill for several years. Episodes of diarrhea and recurrent alimentary difficulties had been present since the second year. The patient had been thin and pale and had enlargement of the abdomen for an indefinite period. He had a chronic non-productive cough since the age of four years. He was admitted to the hospital at the age of six years for therapy of a bronchopneumonia which appeared as a complication of measles.

There were no siblings of this child. The family history was otherwise noncontributory, except for the mother's admission that her diet had been inadequate during her pregnancy.

At the time of admission the boy weighed thirty-four pounds. His appearance was that of emaciation and chronic illness. He was slightly dyspneic and cyanotic. The chest was emphysematous and coarse râles were heard diffusely within it. The abdomen was protruberant and of a doughy consistency on palpation.

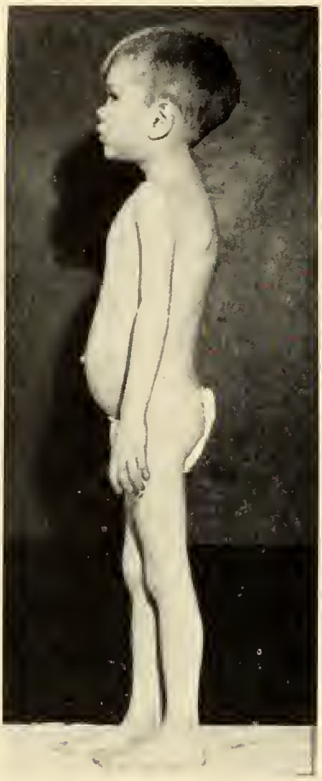

Fig. 1. Patient D. S. The wasting of the extremities, the protruberant abdomen, and the increased antero-posterior diameter of the chest are demonstrated.

Laboratory studies demonstrated a persistent leukocytosis and elevation of the sedimentation rate. The stool fat was found to be much increased by qualitative test. Duodenal aspiration revealed an absence of trypsin activity in the pancreatic juice. The glucose tolerance curve was low. X-ray examination of the chest showed moderate emphysema, a marked increase in broncho-vascular markings, and evidences of bronchopneumonia.

The response to sulfadiazine and penicillin therapy during the three months' period of hospitalization was very slow. The dyspnea was slowly relieved, and the roentgenological findings of pneumonia gradually resolved. The chronic cough and the findings of râles scattered diffusely throughout the lung fields persisted.

Subsequent observations in the Out-patient Service reveal that the condition of this patient is essentially unchanged, despite parenteral vitamin A therapy, oral vitamin B, high protein diet, and periodic postural drainage. He remains thin and pale, and has a persistent cough which is productive of a little mucopurulent sputum. He continues to have intermittent episodes of fever, and is confined to bed much of the time.

The presenting complaints made by the parents of these patients may refer primarily to either the nutritional disturbance or to a respiratory infection, although both alimentary and respiratory disease are commonly present. In the case of younger infants, the failure of growth is neglected, and the usual principal complaint is that of chronic cough, or of the symptoms of a recurrent pneumonia. During later infancy and the preschool years physical retardation is more apparent and these children are brought for medical attention because of marked dwarfism, with their chronic cough occupying a secondary place in the parents' interest.

Data regarding the physical retardation of these patients are recorded in Table II, with comments on the nutritional state of each patient at the time of admission to the hospital. The only patient who had not suffered a marked loss of physique was Patient S. S., who appeared "well-nourished." Further review of her record, however, reveals that her weight had increased but two pounds above birth weight in her four months of life, despite an apparent adequate diet, and her weight of ten pounds at the time of hospital admission was four pounds less than the average for her age.

Much of the reason for the failure of these children to grow normally is revealed in the column "Steatorrhea" of Table II. The observations of distinctively bulky and odorous stools in all of these patients and that of abdominal enlargement in six of the seven would lead one to suspect the presence of steatorrhea. This suspicion was verified quantitatively in four patients and qualitatively in one by the observation of a greater than normal loss of lipids in the feces.

These children are peculiarly susceptible to chronic respiratory infection, with progressive secondary emphysema and bronchiectasis. The infections are highly resistant to therapy, and a febrile state may persist for months, during which time the patient coughs up quantities of thick mucopurulent sputum. The accumulation of the typical viscid bronchial secretions often causes episodes of dypnea and wheezing, as reported in six of our eight patients. In two of these the mistaken diagnosis of pertussis had been made upon the basis of these symptoms. The respiratory obstruction and the increasing emphysema may combine to cause a persistent respiratory deficiency with cyanosis.

Episodes of bronchopneumonia may be superimposed upon this chronic respiratory disease, and are usually responsible for the death of the patient.

A great deal of emphasis has been placed upon the family history as an aid in the diagnosis of this condition. With the exception of a few rare instances in which a maternal intolerance to fat was suspected, the only significant coincidences found by others were in the occurrence of like disease in the siblings of the patients. This coincidence was found in siblings of four of the eight patients described here.

We may summarize the clinical picture as one consisting of a chronic intestinal disturbance, with secondary growth failure and an associated persistent respiratory infection. We would like to emphasize the commonness of each of these complaints in pediatric practice. In clinical examination, without the aid of laboratory procedures, the presence of this systemic entity of fibrocystic disease could easily be undetected.

Laboratory Examinations

1. *Evidence of Steatorrhea.*—The presence of steatorrhea is confirmed by the findings of an increased amount of lipid in the dried stool. The most valid data in this determination is that obtained on the total stool collected over a period of several days, during which the patient is on a normal diet.

The distinctive proportion of neutral fat in the stools, which has often been thought diagnostic of cystic fibrosis of the pancreas, in distinction from idiopathic steatorrhea[11,16], has not been prominent in our patients. In the patient E. S., for instance, neutral fat comprised but 28 per cent of the total fecal lipid. It is the conclusion of Andersen[2] that the proportion of neutral fat in the total fecal lipid is highly variable, and cannot be used as a basis for differentiation of idiopathic steatorrhea from that associated with pancreatic disease.

2. *Evidence of Pancreatic Deficiency.*—The single laboratory test, other than roentgenological studies, which provides a valid basis for the diagnosis of cystic fibrosis of the pancreas in the living patient is the analysis of the pancreatic juice, as obtained by duodenal aspiration. Adequate precaution must be taken in the procedure of obtaining this material, to insure that it is obtained from the duodenum. The aspiration tube should be perforated only within a few inches of its tip, and it must be shown by fluoroscopy to be in the second portion of the duodenum. The most accurate index of the functional capacity of the pancreas is obtained when the organ is stimulated, as by the instillation of a small amount of hydrochloric acid into the tube, or by the intravenous administration of a highly purified secretin preparation.

The content of trypsin in the pancreatic secretions is most commonly analyzed. Its content is evaluated by the lysis of a gelatin substance in successive dilutions of the aspiration material, after the method of Andersen.[2]

3. *Evidence of Infection.*—The white blood count and sedimentation rate are persistently elevated in these patients, manifesting the chronicity of their respiratory infections. Cultures of the sputum during the acute episodes of bronchopneumonia yield staphylococcus aureus with great consistency. This organism was found in six of the seven patients from whom throat cultures were taken.

Pathology

The essential pathology according to Andersen[2] is in the pancreas and the pulmonary changes are secondary, due possibly to nutritional deficiency. The systemic nature of this disease, however, is very striking, and the pancreatic findings are only part of the whole picture. Farber[8], in a recent review of the autopsy findings on eighty-seven cases of pancreatic fibrocystic disease, describes the uniform presence of a homogeneous sticky material in the trachea, bronchi, bile ducts, salivary glands, and pancreas. He believes the inspissation of this material in the ducts causes the characteristic secondary changes, which will now be detailed.

1. *Pancreas.*—On gross examination, lobulation of the pancreas due to contraction of fibrosed areas below the surface of the gland was frequently found. Dilatation of the ducts and plugging of their lumina with the inspissated material previously described was common. Dilatation of the small ducts gave the pancreas a cystic appearance. Atrophy of the exocrine parenchyma of the organ was usually present, with an increase in its interstitial structure due to fibrosis (Fig. 2).

The degree of involvement of the pancreas

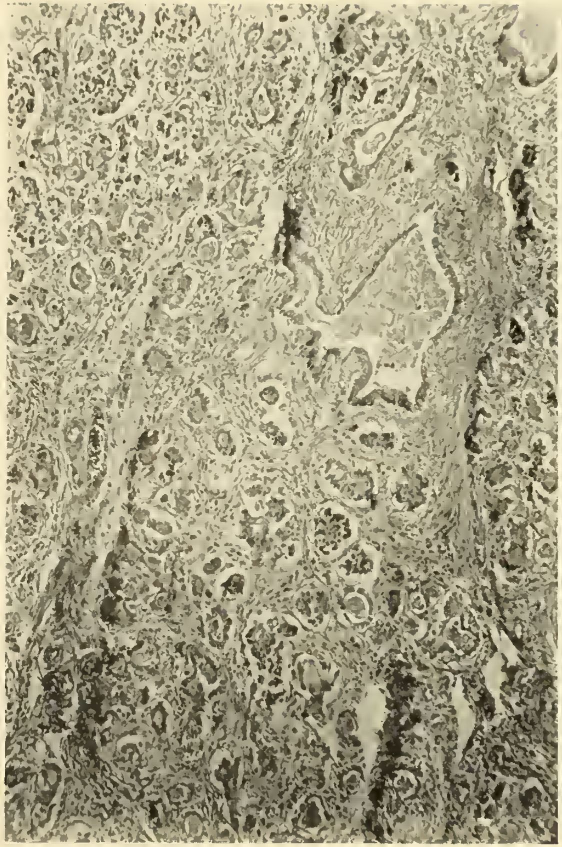

Fig. 2. Patient S. S. Section of pancreas. Marked dilatation of pancreatic ducts and plugging with inspissated mucus. The normal acini are largely destroyed and mucoid material fills the lumina. There is marked interstitial fibrosis. The islets of Langerhans appear normal.

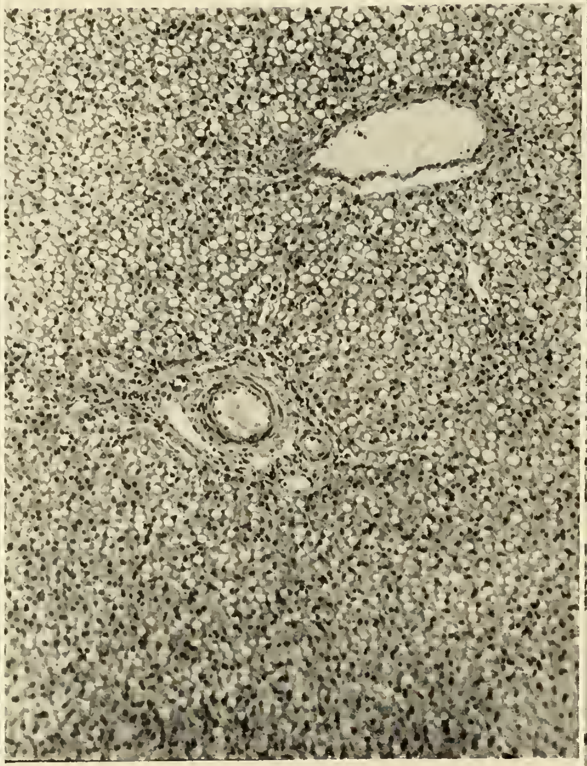

Fig. 3. Patient E. S. Section of liver. Marked degeneration of liver and fatty replacement.

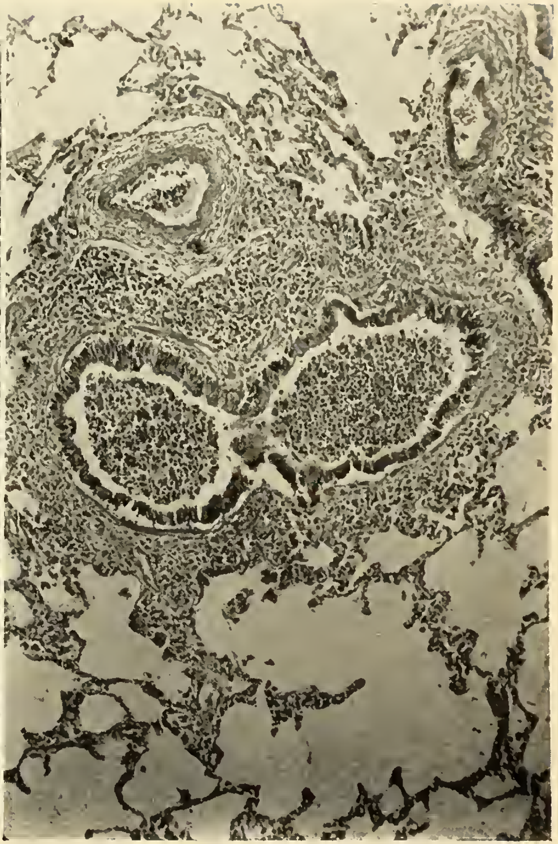

Fig. 4. Patient S. S. Section of lung. Partial destruction of bronchial wall and plugging of bronchial lumen with thick mucopurulent material. Marked peribronchial infiltration is present and there is relatively little fibrosis. Note the surrounding areas of emphysema and destruction of alveoli.

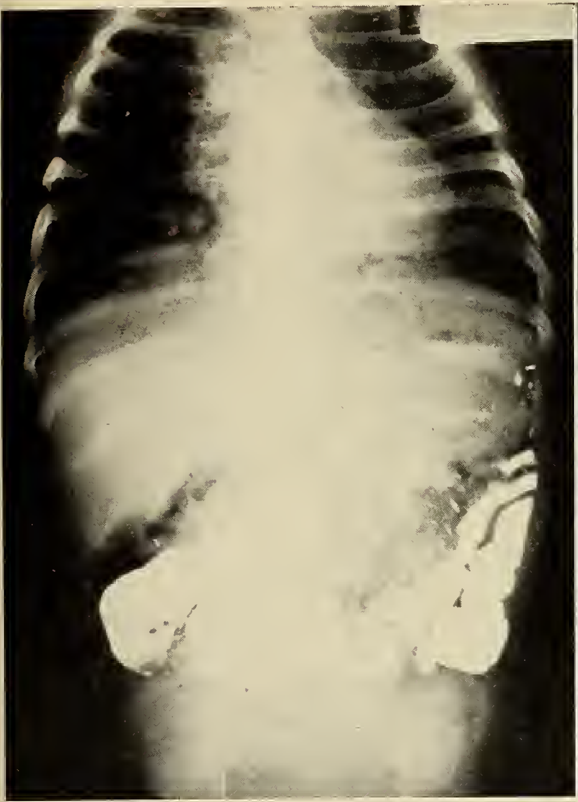

Fig. 5. Patient M. M. Roentgenogram of chest and stasis-ray examination of small bowel. Pulmonary changes are similar to those in Figure 6. The distinctive "segmentation" of the barium meal in the small intestine is indicative of steatorrhea.

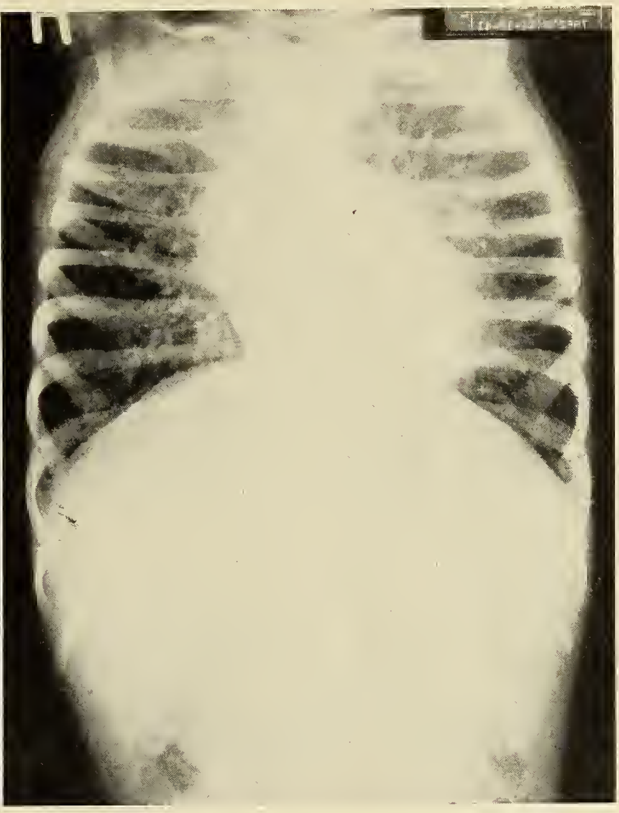

Fig. 6. Patient E. S. Roentgenogram of chest. Diffuse peribronchial infiltration accentuated about the hilum and extending in linear manner peripherally. Marked peripheral emphysema, demonstrated by depressed diaphragm and increased radiolucency. The areas of consolidation near the left hilum represent bronchopneumonic patches.

varied greatly. In cases with minimal involvement the only finding was occlusion of the ducts and acini, with no atrophy. It should be noted, however, that even in these minimal cases usually no trypsin was found in the duodenal contents. The islets of Langerhans were not involved.

2. *Liver.*—The liver was often larger than normal, and contained varying amounts of fat. The degree of fatty degeneration seemed to vary directly with the amount of pancreatic destruction (Fig. 3).

3. *Respiratory Tract.*—In each of the forty-nine cases in Andersen's original series there were changes in the respiratory tract. There was mild tubular dilatation of the small bronchi and bronchioles, with plugging of their lumina with tenacious purulent material. In some cases these bronchiectatic changes were very marked. Often there were multiple abscesses arising in the small bronchi, and the trachea also contained sticky mucopurulent material. At times the appearance suggested that the patient must have experienced suffocation due to the abundance of the exudate.

Pulmonary fibrosis in our cases was very minimal, less than would be expected with such a marked amount of chronic inflammation (Fig. 4).

Roentgenological Findings

1. *Small Intestine.*—According to Golden[10], the small intestine of newborn infants frequently presents a different appearance on examination with barium to that found in older children. Apparently due to a lack of nervous reflex control, areas of spasm alternating with areas of dilatation are present. 'A "segmentation" effect results; another term used in respect to this appearance is a "puddling" formation.

This effect is greatly accentuated in nutritional disturbances. Vitamin deficiency, especially lack of the vitamin B complex, apparently plays an important part in the production of the intestinal changes seen in steatorrhea. In the nutritional deficiencies, there is considerable thickening of the mucosal folds with elimination of the normal fine mucosal pattern. There may be merging of the folds due to this thickening, resulting in a smooth appearance of the mucosa. This effect is most noticeable in the jejunum because the folds are normally more prominent here than in the ileum.

Hypomotility is another prominent feature. Normally the barium passes through the small bowel into the cecum in three to six hours. In many cases of steatorrhea, passage is delayed for as long as eight or ten hours.

The above changes are not specific for the pancreatic type of steatorrhea. They are present also in ideopathic steatorrhea. Figure 5 illustrates these findings as observed in patient M. M.

2. *Chest.*—The appearance of the disease in the chest roentgenogram is somewhat characteristic, although it may be simulated by other conditions when still in its early form. Certain features are strongly suggestive of the presence of the disease.

The distribution of the changes is rather uniform and widespread, involving all lobes of both lungs equally.[4] Concentration of the lesions is greatest about the hilar regions with loss of the normal vascular markings. Mottled linear shadows fade out toward the periphery where they are gradually lost in the areas of peripheral emphysema. These linear densities are often misinterpreted as representing fibrosis. They are in fact due to the marked peribronchitis and bronchopneumonia (Fig. 6).

Frequent acute episodes of bronchopneumonia occur which leave permanent damage to the lungs. Bronchopneumonia is shown on the films by consolidations of various sizes found more commonly in the perihilar regions.

Bronchiectasis of an atypical type is one of the most characteristic features. It is very diffuse and involves the upper lung fields as well as the bases. A final diagnosis of bronchiectasis can only be made by a bronchogram. The importance of the frequency of occurrence of bronchiectasis in this disease was stressed by Andersen. Of eight children who died of bronchiectasis in the first year of life, seven had definite cystic fibrosis of the pancreas.

Atelectasis occurs frequently as a result of complete obstruction of a bronchus. A local area of homogeneous density with retraction of the mediastinum or elevation of the diaphragm is sometimes seen on the film.

Emphysema is quite marked and is much more apparent in the peripheral areas. The rib interspaces are widened and the diaphragm on both sides is depressed (Fig. 6). Emphysems is due to partial bronchial obstruction.

3. *Differential Roentgenological Diagnosis.*—The disease can be distinguished from bronchopneumonia by its lack of definite consolidation, by its diffuse character, and its extreme chronicity. Bronchiectasis in the ordinary form has a tendency to distribute itself in the lower lung fields. Bronchial asthma resembles this disease very closely in the chest film. The picture as seen in cystic fibrosis of the pancreas is distinguished by greater relative density of the hilar shadows.

In summary, the pulmonary changes in cystic fibrosis of the pancreas are quite characteristic. The disease is diffuse, is of chronic nature, and appears to be progressive. Mottled densities are seen in both hilar regions extending in streaked fashion into the peripheral areas of emphysema. The findings are sufficiently suggestive to be recognized in the chest roentgenogram, and other diagnostic procedures should then be carried out.

Therapy

The therapy of this disease has so far been disappointing. The intestinal symptoms and the nutritional loss are improved by a diet low in fat and high in protein. An excellent dietary regime for these children including specific mineral and vitamin supplements, has been recently outlined by Andersen.[3] The chronic pulmonary condition is benefited by periodic postural drainage. With the use of penicillin therapy these children now frequently survive the recurrent episodes of pneumonia to which they usually succumbed. The importance of vitamin A in the etiology of the respiratory disease has been emphasized by Andersen. We therefore have given massive doses of parenteral vitamin A, but have not found it to be of specific value.

The greatest known age of survival at the present time is fourteen years.[13]

Summary

Cystic fibrosis of the pancreas is a systemic disease which is more prevalent than is generally recognized. It manifests itself clinically by stea-

(Continued on Page 453)

A NEW METHOD FOR CUTTING FULL-THICKNESS OR SPLIT-THICKNESS SKIN GRAFTS

ALBERT E. RITT, M.D.
Saint Paul, Minnesota

For many years, it has been my good fortune to have a fairly representative industrial service as part of my general practice.

Many of the injuries have been concerned with finger-tip defects caused by punch presses, circular and handsaws, planers, and similar pieces of mechanism. In many instances, the injuries have been clean-cut, partial amputations either through the soft tissue portion of the finger alone, or through various portions of the bony part of the digit. In all instances, it has been my desire to preserve as much length of the finger as possible.

Where feasible, a skin graft has been the answer to this problem. In many instances, I have found it convenient to use some variation of a circular skin graft or flap to close such defects. Up to the present time, it has been time saving for me to use the patient's thigh on the side of the injury as the donor site.

Grafts cut according to a muslin or gauze pattern, in my experience, have not been too satisfactory. It must be remembered that grafts shrink in size up to 20 or 30 per cent, and it is therefore understandable that a circular graft is more adaptable to be patterned than a more regular-sided one.

The method which seems to greatly simplify, speed up, and generally improve the procedure, is as follows:

1. Prepare the donor site, according to the accepted methods.
2. Estimate the size of the graft needed by placing over the defect to be closed the thumb opening of a forceps.
3. Using the handle of this forceps as a stabilizing unit, place the fenestra or thumb opening firmly on the donor site.
4. Using a scalpel with a No. 15 blade, incise the skin on the inside of the fenestra or thumb opening following the inside perimeter of the opening.
5. Cut to desired depth by varying the pressure on the scalpel.
6. Pick up circumscribed or delineated skin with a light grasping forceps.
7. Undercut base.
8. Dust base of graft with sulfa powder and place on wet normal-saline pack.
9. Sew selected graft to previously prepared site.
10. Cover both donor and recipient sites with vaseline gauze and a generous pressure dressing.
11. Bandage with an elastic type of bandage or tape.

If it is felt that a larger graft should be taken than is provided by the size of the thumb opening in the forceps, then a semicircular cut may be made from one end of the forceps, the forceps moved, and the semicircular cut completed. Each half may then be joined by following a straight edge of the forceps.

In a similar manner, an elliptical or smaller graft may be made.

MINNESOTA GIVES $7,065,365 IN THE THREE WAR YEARS

Minnesota citizens united gloriously to give a total of $7,065,365 for our own and for our allies in three war campaigns of the Minnesota War Service Fund, figures compiled from county chairmen's reports to state headquarters show.

For three successive years, Minnesota raised 100 per cent of its National War Fund quota for USO, War Prisoners' Aid, United Seamen's Service and the relief agencies of our allies. It was one of a very few states in the nation to go over the top all three years.

Under the leadership of J. Cameron Thomson, state chairman, a board of trustees representing various sections of the state and volunteer chairmen in every county, Minnesota won a national reputation in federated wartime giving.

Home Front Added

Along with the more than $7,000,000 raised for national wartime agencies, Minnesota citizens contributed at the same time in united campaigns for local agencies a total of $9,479,978.

Thus through the war years, Minnesota citzens gave $16,554,240 for our men in service, for our allies and for the home front.

1945 Campaign

In the 1945 campaign, a total of $2,088,026 was contributed—$1,206,428 by the three metropolitan areas and $881,598 by out-state counties.

51 Counties Over

Fifty-one campaign units in this last campaign reached or exceeded their goal. Despite the indifference toward such wartime campaigns engendered by the coming of peace a month and a half before the opening of the campaign, the state made a great record and the 40,000 workers who carried on the campaign worked tirelessly to put the drive over.

Only eight other states in the nation reached their National War Fund goal in the 1945 campaign, William C. Walsh, campaign director, reported, and of these, Minnesota had the largest quota. Only one other—Iowa—had a quota of more than $2,000,000.—*News Bulletin,* April 24, 1946 (Minnesota War Service Fund)

CLINICAL-PATHOLOGICAL CONFERENCES

DIAGNOSTIC CASE PRESENTATION

ARTHUR H. WELLS, M.D., and L. L. MERRIMAN, M.D.
Duluth, Minnesota

Dr. L. L. Merriman: A sixty-four-year-old white male clerk (Case 2243) was admitted to the hospital two weeks before his death complaining of severe dyspnea. He had had pneumonia with emphysema almost thirty years ago. Ever since that time he had noticed dyspnea with slight exercise. This was at first of a minor character but gradually progressed, especially during the past five years, until at present it causes him considerable discomfort. For example, he has to pause while firing the furnace between shovels of coal to catch his breath. The dyspnea has been worse during the winter months. He has noticed no particular association with food, clothing, animals, seasons, et cetera. He has had no precordial pain, palpitation, nocturnal dyspnea, or edema. When he stopped smoking five years ago, a chronic cough productive of whitish sputum disappeared. There was no further coughing until the onset of a "cold" about one and one-half months prior to his death. His past medical and social history were essentially normal. His father and a brother died of pneumonia. The physical examination revealed a mentally alert, co-operative, slenderly built, severely dyspneic, weak man of sixty-four years with a normal temperature, blood pressure of 105/75, pulse 85, and respiration 25 per minute. The chest was "barrel-shaped" and had diminished respiratory expansion. Breath sounds were diminished and there was hyperresonance throughout the thorax. There was a hacking cough productive of thick yellowish sputum. There was no detectable movement of the diaphragm. A few bronchial râles were heard. There was no wheezing. The size and rate of the heart were normal. Its sounds were distant. There were no murmurs. The pulse and peripheral blood vessels were normal. The second pulmonic sound was accentuated. There was no evidence of chronic congestive heart failure. An electrocardiogram (Fig. 1) was interpreted as evidence of myocardial disease of indeterminate type. A roentgenogram (Fig. 2) was interpreted as showing pulmonary emphysema, scoliosis of the thoracic spine, old, healed, fibroid tuberculosis of the right upper lobe with calcified hilar lymph nodes on the right. In the laboratory, the examination of many sputa failed to reveal acid-fast bacilli. The red blood cell count was 5 million, and the white blood cell count was 9 thousand to 15 thousand with moderately increased percentage of neutrophils. The red blood cell sedimentation rate was 10 mm. in one hour. The basal metabolism rate was plus 13 and the Kline test was negative.

During the two weeks in the hospital preceding his death, he suffered almost continuously from dyspnea which was only partially relieved with oxygen and helium therapy along with aminophylline and supportive measures. Talking or slight exertion markedly aggravated both dyspnea and coughing. Brief spells of relief were invariably followed by attacks in which there was extreme anxiety in an effort to breathe enough air to exist. Every muscle in his body appeared to be taking part in this desperate need for oxygen. There was a continuous, mild but definite cyanosis of his lips and finger nails. His condition had shown no improvement up until the time he was found sitting in a chair dead.

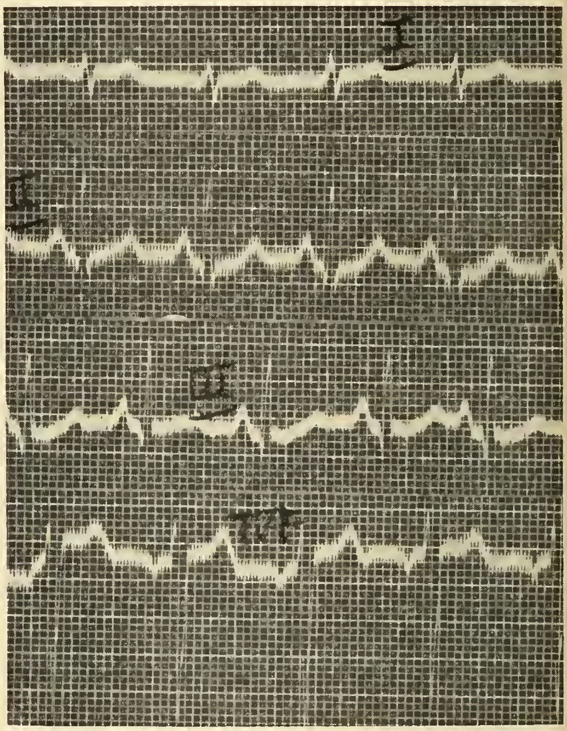

Fig. 1

The case is now open for diagnoses.

Physicians: Ayerza's disease. Coronary thrombosis. Pulmonary emphysema with right heart failure. Thrombosis and partial occlusion of the pulmonary artery. Chronic myocarditis. Congenital cardiac anomaly.

Autopsy

Dr. A. H. Wells: The diagnosis of Dr. F. J. Hirschboeck is correct. The autopsy examination revealed a

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From the Department of Clinical Pathology, St. Luke's Hospital, Duluth, Arthur H. Wells, M.D., Pathologist.

grade IV pulmonary emphysema uniform throughout all lobes of both lungs, associated with a mild suppurative chronic bronchitis, a mild bronchiectatic dilatation of delicate walls of the small bronchi beginning in the third branches and complicated by a mild cor pulmonale with chronic passive congestion of the liver and spleen. There were only mild toxic changes in the myocardium. The coronary and other arteries of the body were in excellent condition. The microscopic examination of the lungs revealed a low grade chronic inflammatory process in the walls of the larger bronchi. Their epithelium was intact. There was considerable dilatation of most of the air passages of all sizes with a decreased breadth of their walls. Occasionally the smaller air passages were normal in size. The respiratory bronchioles, alveolar ducts, atria, air sacs, and alveoli were uniformly and severely dilated throughout all of the sections. Their walls generally formed delicate strands of tissue containing very few red blood cells. The arterioles had mildly thickened walls. There were no inflammatory cells outside of the few found in the larger air passages.

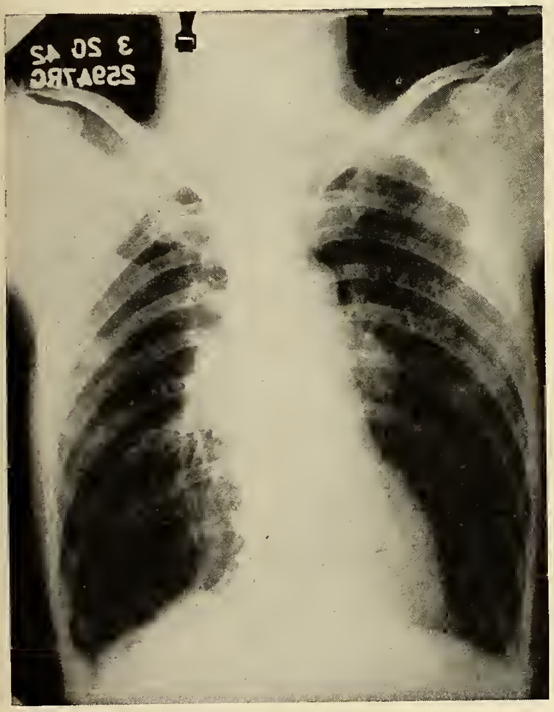

Fig. 2

In conclusion, it is my opinion that the immediate cause of death was acute right heart failure, the result of chronic pulmonary hypertension caused by extreme pulmonary emphysema, initiated as a complication of pneumonia thirty years previously, and aggravated by recurrent bronchitis.

Discussion

Emphysema may be defined as an overdistension of the primary lobules of the lungs. This broad definition is necessary to include certain cases of acute reversible emphysema. In the more important group of chronic emphysema there is a widely varied etiology with, in most instances, a constant functional change dependent upon a loss of elasticity in the lung tissues with increased intrapleural pressure, increased pulmonary residual air, decreased tidal air efficiency, and atrophy of stretched hemo-respiratory surfaces. As a group, pulmonary emphysema is among the most frequent of human illnesses. In general its frequency and severity greatly predominates in the made sex. The classifications of pulmonary emphysema in common use are a mixture of confusing clinical, pathological, etiological, and physiological manifestations. Although there is no general agreement concerning the etiology of even the commoner forms of emphysema, it is entirely possible to create a working classification based upon etiology.

Classification of Pulmonary Emphysema

I. Primary pulmonic emphysema
  A. Senile (degeneration) emphysema[9,35]
  B. Idiopathic emphysema[38]
II. Secondary emphysema
  A. Secondary pulmonic emphysema
1. Obstructive emphysema[7,29,32]
  a. Asthma
  b. Bronchitis
    Infectious[22,36]
    Chemical (poison gas)
  c. Stenoses of air passages[32]
    Internal or external
      inflammatory
      neoplastic
      cicatritial
      exudative
      transudative
      congestive[12]
      hyperplasias[3]
      foreign bodies[27]
  d. Intentional
    Exertion glottis closed[9]
    Glass blowing (?)[9]
    Chronic coughing[9,18]
2. Compensatory (propulsion) emphysema
  a. Surgical excisions[4]
  b. Air space consuming lesions
    Exudates[18,22]
    Transudates
    Congestion[12]
    Neoplasm
    Silicosis
    Fibrosis
    Cysts
  c. Atelectasis
    Air passage obstructive
      neoplasm
      exudate
      transudate
      inflammation
    Extra pneumonic
      peural fluids
      peural masses
      thoracic deformities[15]

B. Neuromuscular (hyperventilation) emphysema
  1. High altitude[8,32]
  2. Extreme exertion
  3. Emotional
  4. Paroxysms of coughing

C. Thoracic enlargement (excessive expansion) emphysema[32]
  1. Costo-vertebral deformities[2,19,20]
  2. Costo-sternal deformities

D. Cardiovascular (nutritional) emphysema[5,6,17,18,28,37]

Varying degrees of emphysema in patients over sixty years are almost as common as the finding of arteriosclerosis in postmortem examinations. This almost universal finding of emphysema in the senile must certainly be indicative of a degenerative change. Emphysema occurring at much younger ages without any previous medical history of respiratory infections, asthma, et cetera, is occasionally reported. Dr. F. J. Hirschboeck has been following identical twins, aged twenty-five, with idiopathic pulmonary emphysema. The great majority of cases of pulmonary emphysema of clinical importance in younger individuals is associated with asthma, bronchitis, and pneumonia. These conditions most likely cause the emphysema because of obstruction of either inspiration and expiration or both. The importance of years of hard labor, glass blowing, chronic coughing, et cetera, is difficult to evaluate, but these may well be contributing factors in the development of emphysema in certain individuals. When the function of a significant portion of the lung has been destroyed by any process inside or out of the lung, the remaining lung will become emphysematous. This is commonly called compensatory emphysema but might better be named propulsion emphysema. A pathologist routinely expects a severe emphysema in the uninvolved lung of an elderly patient with severe pneumonia of even short duration. Transient emphysemas are described as a result of hyperventilation, associated with high altitude, extreme exertion, et cetera. Horses develop an incapacitating emphysema ("broken wind") as a result of improper training. It is entirely possible for emphysema to result from any deformity in which the total cubic space of the pleural cavities is considerably increased. Confusion has arisen between the almost universal enlargement of the pleural cavities in other causes of pulmonary emphysema and a theoretical disease of intervertebral discs of the spine resulting in an enlarged thoracic cage and secondary pulmonary emphysema. No agreement can be found in the literature concerning the possible development of pulmonary emphysema as a result of a poor blood supply to the lung tissues. In one review of the literature of Ayerza's disease[6], the lungs were apparently surprisingly free from emphysema. It should be quite obvious that in any given case of pulmonary emphysema one might well expect a number of different causative factors.

Pathologic Anatomy

The anatomic changes in emphysema are primarily those of signifcent dilatation of the primary lobule, that is, the respiratory bronchiole, alveolar ducts, atria, alveolar sacs, and the alveoli. A dilatation of the bronchi with decrease in thickness of the walls may be noted up as high as the second division beyond the main bronchus. Secondary manifestations are the inevitable changes in the thoracic cage ("barrel-chest," dorsal kyphosis, elevation of sternum, horizontal position of ribs, separation of ribs, wide epigastric angle, ankylosis of the costo-vertebral and the costo-sternal articulations, et cetera. Also, cor pulmonale, widespread evidences of right heart failure, interstitial emphysema, emphysematous blebs, pneumothorax, and bronchiectasis are common.

The authors of several recent textbooks of pathology and the majority of authors commenting on the subject in the current literature agree to the great importance and prevalence of the pathologic feature of rupture of the overdistended, thin alveolar walls with coalescence of alveolar air sacs. This prevalent belief is probably erroneous.[14] The dangling so-called broken walls of alveoli are most likely the margins of dilated orifices of alveoli. Thick sections of lung tissue fixed in a distended condition reveal no tearing of the thin walls of terminal air spaces. The greatest distension occurs in the terminal respiratory ducts, atria, and air sacs and less in the alveoli. Emphysematous blebs are a form of interstitial emphysema and not a coalescence of alveoli.[26] There is evidence that alveolar pores may occupy as much as 50 per cent or more of the alveolar walls in emphysematous lungs.[24] Whether the very important network of elastic fibrills in the walls of terminal air spaces (primary lobules) is simply stretched or degenerated is not settled. The pathologic changes resulting from associated, causative, and complicating disease processes, such as asthma, bronchitis, tuberculosis, silicosis, bronchiectasis, et cetera, may be present in any given case. Parker[33] found in an anatomic study of thirty-two cases of "essential emphysema": 75 per cent cor pulmonale, 44 per cent right heart failure with decompensation, 80 per cent arteriosclerosis of the pulmonary artery (secondary), and 66 per cent arteriolar sclerossis ,secondary).

Pathologic Physiology

Associated with the gradual dilatation of terminal air spaces, loss of pulmonary elasticity, and gradual dilatation and fixation of the thoracic cage in the phase of inspiration, there are measurable changes in the physiologic aspects of respiration. Of the greatest importance are the changes in intrapleural pressures from a normal of minus 3 to minus 6 cm. of water to, in advanced cases, 0 to plus 2 cm. of water.[38] These changes are generally interpreted as the result of a failure of the elastic properties of the lung tissue to force out the inspired air and the assumption of this function by muscles of expiration.[9,10] The residual air may rise from 1000 c.c. to 3500 c.c. or more in emphysema. Yet the vital capacity is either reduced or requires a prolonged effort on the part of the patient to reach a normal figure. The tidal air is generally somewhat increased, apparently to compensate for a gradually increasing inefficiency. This is variously ascribed to a less effective although increased alveolar respiratory surface area, improper mixing of air in the primary lobules, and poor circulation through atrophic alveolar capillaries. A rise in the carbon dioxide tension in the air spaces coincides with its rise to over 60 c.c. per cent in the arterial blood and a corresponding oxyhemoglobin reduction to less than 80 c.c. per cent.[35] There is an associated increase in the plasma bicarbonate with a fall in the plasma chloride due to its shift into the red blood cells. A carbon dioxide tolerance is developed in the patient. As in other chronic conditions causing similar blood changes, there develops a compensatory polycythemia with red blood cell counts ranging from 5 to 6½ million. A by-product of the increased intrathoracic pressure is an interference with peripheral venous return with engorgement of veins in the neck and elsewhere. There may also be some interference with circulation of blood and lymph in the pulmonary tissue.

Clinical Recognition

The outstanding symptom in practically all uncomplicated cases of chronic pulmonary emphysema is a gradually progressing, longstanding dyspnea. Terminally this may be associated with cyanosis. The thoracic and pulmonary changes may be demonstrated by physical examination and x-ray studies but must not be confused with the thorax of hyperesthetic body build. There are the physical evidences[25,35,38] of fixation of the diaphragm, decreased or obliterated dullness over the liver and heart, prominence of cervical veins, diminished tactile fremitus hyperresonance to percussion, feeble breath sounds, prolonged expirations, feeble heart sounds, accentuated pulmonary second sound, changes in the vital capacity curve and intrapleural pressures measurements, the use of accessory muscles of respiration with slight exertion, slight differences in the circumference of the chest on inspiration and expiration, and terminally the signs of chronic congestive right heart failure. Hippocratic digits, polythemia, signs of interstitial emphysema[1,16], and spontaneous pneumothorax, may be occasionally noted.

O'Donoghue[30] lists the x-ray manifestations of emphysema: (1) general increase in brilliancy of lung fields, lack of change of radiolucency of lungs with respiration; (2) low, flat diaphragm often scalloped in appearance; (3) increased space between the heart and sternum; (4) increased prominence of pulmonary markings in the peripheral lung zone; (5) relative or absolute increase in the thickness and density of large vessels toward the root of lungs; (6) impression of smallness of cardiac shadow to increase in width of chest; (7) transverse diameter of chest in the left anterior oblique (45°) film, often actually is greater than transverse diameter of the postero-anterior film at the same level; (8) scalloped and balloned-out appearance of the soft tissues in the intercostal spaces when the chest is visualized in an oblique view; (9) flaring of the ribs with a tendency to form an obtuse angle interiorly at the costal-vertebral junction; (10) increase in the width of the intercostal spaces; (11) an abdominal enlargement of the lower thoracic cage; (12) annular shadows forming areas of radiolucency in the various parts of the lung; (13) hypertrophy of the pectoralis muscle may cause loss of translucency across the middle lung fields, the scaleni muscles similarly may cause an apparent loss of translucency at the aspices; (14) the roentgenological comparison of the cubical measurements of the chest at the height of inspiration and expiration by double exposure films reveals very little change in increased space; (15) changes seen following intratracheal injection of lipiodol have a characteristic "tattered, torn, foliage appearance."

Differentiation, of course, must be made from some of the various causes of dyspnea and cyanosis. The findings of pulmonary emphysema are so common in older patients that they are likely to be overlooked. The past medical history of the patient may give the fundamental clue as to the disease and the time of onset of the emphysema. An electrocardiogram may reveal a right axis deviation and the absence of evidence of coronary thrombosis.

Treatment

The treatment of chronic pulmonary emphysema is notoriously unsatisfactory.[9,35] Any improvement in the underlying disease process as in asthma, chronic bronchitis, etc., is paramount. Prophylactic therapy against infectious processes of the respiratory tract is indicated. Possibly the most important single procedure is a change to a warm and equable climate. Christie[10] recommends the use of an abdominal belt. In emergency situations, the use of oxygen, aminophylline, digitalis, chloralhydrate or barbiturate, and absolute bed rest have been indicated. Phlebotomy may be lifesaving. Morphine and codeine suppress cough reflexes and are contra-indicated. The training of muscles of expiration may have value. Surgical procedures aimed at mobilization of the chest have not been successful.

Summary

1. A case of pulmonary emphysema has been presented as a diagnostic problem.
2. A working classification of pulmonary emphysema based on etiology is submitted.
3. A brief review of the literature on the general subject is summarized.

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SPONTANEOUS PERFORATION OF ESOPHAGUS

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Dr. Robert Bronson: A sixty-seven-year-old white man was admitted to the hospital on February 19, 1946. His past health had been good except for a history of a skull fracture and occasional attacks of burning substernal pain which was relieved by bicarbonate of soda. His present illness began about noon on the day of admission with a sudden attack of severe pain in his left chest. The pain occurred while walking on the street. He collapsed and was brought home in a taxi. On arrival home, his neck was found to be swollen and purple. He suffered great pain in his chest. The swelling in his neck became more pronounced. On admission to the hospital, soon afterwards his pulse was 92 and his blood pressure was 90/70. There was marked respiratory distress. The neck showed a marked subcutaneous emphysema. The trachea deviated to the right. There was subcutaneous emphysema over the left chest and in the left axilla. The right side of the chest was clear on percussion and ausculation. The left side was hyperresonant with an absence of breath sounds. The heart border could not be determined. The heart sounds were faint. The clinical impression on admission was a spontaneous pneumothorax of undetermined cause. X-ray studies revealed a left pneumothorax with subcutaneous emphysema on the left. He was seen by Dr. Thomas Kinsella in consultation. Dr. Kinsella's diagnosis was spontaneous rupture of the esophagus. A small amount of barium was given by mouth. X-rays showed the barium to pass into the left pleural cavity. A thoracotomy was done by Dr. Kinsella. A large amount of recently ingested food, fluid, and some barium was found in the left pleural cavity. Cultures from the fluid showed a variety of organisms with nonhemolytic streptococci predominating. A perforation was found on the posterior lateral wall of the esophagus just above the diaphragm. The tear in the esophagus was closed with silk sutures. Four drains were placed in the pleural cavity and continuous suction was applied. He was given large doses of penicillin and sufadiazine. His leukocyte count rose to 20,500 with 90 per cent neutrophiles. A large amount of fluid was aspirated from the left chest cavity by the suction apparatus. At times the suction was discontinued and penicillin introduced directly into the chest cavity for three hours at a time. Then the suction was continued for an hour. This regime was continued with considerable improvement in the patient's condition. On February 22, 1946, three days after admission, a chest film revealed complete re-expansion of the left lung with very little evidence of fluid present. On February 26, 1946, there was a mottled increase in density in the peripheral portion of the right lung field which had the appearance of pneumonia. He continued to show improvement until February 27 when he complained of sudden pain in the right chest. On February 28, he complained of a second attack of severe pain in the right chest with severe dyspnea. He died an hour later.

Dr. Robert Leighton: The postmortem examination showed the immediate cause of death to be a pulmonary embolus. The main branch of the right pulmonary artery was obstructed by a large antemortem blood clot. The right lung contained two small fresh hemorrhagic infarcts showing that he had minor embolic

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From the Minneapolis General Hospital, A. J. Hertzog, M. D., Pathologist.

episodes prior to the fatal embolus. The source of the embolus was not demonstrated. The pelvic veins and upper femoral veins were free of blood clots. The embalming procedures prevents the pathologist from carrying out extensive dissection of the leg veins. The left lung showed only partial atelectasis and also showed a small infarct. The left pleural cavity showed a suppurative pleuritis but contained little fluid. The surface of the left lung was covered by old food particles.

The esophagus showed a linear ulcer on the posterior lateral aspect of the wall just above the cardia of the stomach. This tear measured 4 cm. in length and the outer surface was partially closed by sutures. The suture line had broken down and there was very little evidence of any healing. The surrounding mucosa of the esophagus showed evidence of an acute esophagitis. There was no evidence of any acute or chronic ulcers in the stomach or duodenum. Microscopic examination of the esophagus showed the wall to be necrotic and infiltrated with large numbers of neutrophiles. There was no evidence of malignancy.

Dr. Bronson: It is unfortunate that this man developed a fatal pulmonary embolus as his condition postoperatively was satisfactory and it appeared that he would have made a recovery from his operation.

Physician: Was there any foreign body responsible for the perforation?

Dr. Leighton: No. We have no reason to believe that any foreign body became lodged in the esophagus prior to its perforation.

Intern: Was there any ectopic gastric mucosa present in the esophagus in the region of the perforation?

Dr. Leighton: No. There was no evidence of any gastric mucosa present.

Dr. Hertzog: This is the third case that I have seen at autopsy of spontaneous perforation of the esophagus in the last three years. In the first case, I had difficulty convincing my colleagues that the perforation occurred prior to death and was not a postmortem perforation. Postmortem autolysis of the walls of the stomach is not uncommon and this sometimes may involve the wall of the lower esophagus. In postmortem autolysis of an organ, one does not get an acute ulcer with the walls infiltrated by an acute inflammatory exudate. In the past, many of these cases have probably been dismissed by the pathologist as examples of postmortem perforations. Two of these cases had definite x-ray evidence of esophageal perforation prior to death.

Spontaneous perforation of the esophagus is barely mentioned in the medical literature. Acute esophagitis is a fairly common finding at autopsy. It is more common in debilitated individuals. Regurgitation of gastric contents, vomiting and gastric intubation may all be etiological factors. The wall of the esophagus is thin. It is easy to see how in an occasional case of acute esophagitis an ulcer can occur with perforation. I think the part played by ectopic gastric mucosa in esophageal ulcers have been greatly overemphasized. I will briefly summarize the findings in the other two cases that I saw at autopsy. It is of interest that both of them had duodenal ulcers.

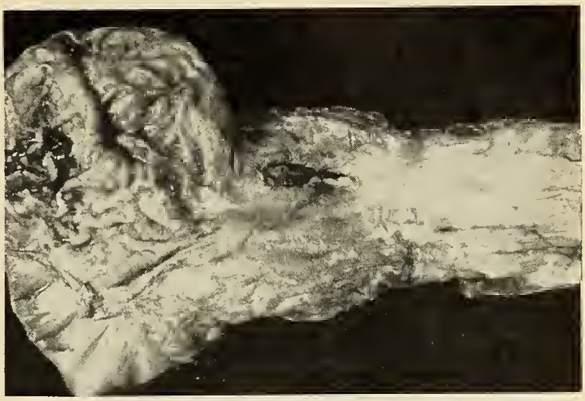

Fig. 1. Acute ulcerative esophagitis with perforation.

The first case was a seventy-three year old man who had enjoyed good health except for a chronic duodenal ulcer. On February 1, 1943, after his evening meal while sitting in a chair, he was seized with a severe epigastric pain. He was prostrated. His physician was called immediately. The clinical impression was a perforated peptic ulcer. He was admitted to St. Barnabas Hospital soon afterwards. X-rays of his chest and abdomen were taken. There was no evidence of any free air in his abdominal cavity. The chest film showed some consolidation at the base of both lungs. The abdomen was surgically explored. There was no evidence of any perforation of any intra-abdominal viscus. The patient's condition remained critical with signs of shock present. He expired approximately fifteen hours after the onset of his illness. Autopsy showed a perforation of the esophagus into the left pleural cavity with approximately 1500 c.c. of dark brown fluid that had the odor of gastric contents. The perforation of the esophagus occurred just above the diaphragm. Microscopically there was an acute ulcerative esophagitis. There was a chronic duodenal ulcer present.

The second case was a seventy-year-old-man who likewise had a history of a chronic duodenal ulcer. On November 27, 1944, he was seized with a sudden severe epigastric pain. He was admitted to St. Barnabas Hospital two hours after the onset of pain. Blood pressure was 90/50 and there were signs of shock. There was emphysema of the neck. X-rays showed fluid in his left pleural cavity with air throughout the mediastinum and soft tissues of the neck. He was treated for shock and received sulfa therapy and penicillin. Two hundred cubic centimeters of dark brown fluid was removed from the left pleural cavity. This showed a total acidity of 55 degrees. A tension pneumothorax developed. A second thoracentesis yielded 1,000 c.c. of fluid and 750 c.c. of air. The emphysema of his

(Continued on Page 461)

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from April issue)

Early Conditions of Medical Practice

Physical conditions, of weather and roads, were those that for many years caused the medical practitioners of villages and rural communities the greatest labor and hazard in the conduct of medical practice. There is not a reminiscent comment that has come down from the earliest of pioneers or from their friends and families that does not touch particularly on the necessity for constant travel on horseback or in horse-drawn vehicles. Many stories stress the fact that the burden of opening a track, particularly on winter roads drifted full of snow, devolved on the doctors. The farmers, contrary to reasonable supposition, waited until the physicians, struggling through to their patients, had broken a trail. The unvarying theme is that of Dr. Oliver Wendell Holmes when he so well said of the general medical practitioner, "Half a dollar a visit—drive, drive, drive, all day; get up in the night and harness your own horse—drive again ten miles in a snow-storm; shake powders out of vial—drive back again, if you don't happen to be stuck in a drift; no home, no peace, no continuous meals, no unbroken sleep, no Sunday, no holiday, no social intercourse, but eternal jog, jog, jog in a sulky."

In 1858 J. W. Bishop, competent civil engineer, published his *History of Fillmore County,* mentioned earlier, "with an outline of her resources, advantages and the inducements she offers to those seeking homes in the West." (And these resources, advantages and inducements, he said, would with several minor modifications apply to the greater portion of Houston, Winona, Olmsted and Mower Counties and to Northern Iowa.) Among the advantages of the region he included the roads, for he optimistically set forth that "the wagon roads of the county have been but little worked as yet, but the face of the county and the nature of the soil are such, that good passable roads are found ready made, which, except in very wet weather, are smooth and hard, and may be travelled with heavy loads." Unhappily, although undobtedly this statement was true in all its parts, there was a great deal of "very wet weather."

In his memoirs Dr. Jacob Wright Magelssen, who came to Rushford in 1874 and spent the remainder of his long life in the village and community in active medical practice, gave a few lines to roads that must be a description to end descriptions:

> It would be hard to tell which was the worst season for a country doctor as far as the roads were concerned. In winter the wind sweeping over the prairies piled up drifts so impassable that I have sometimes tipped over four times in a half mile. Nothing for it then but to get out, shovel out the team, untangle them, and make another start. An hour of it would make me mad enough to shed tears of fury. But in the spring—Oh, those bottomless bogs that were called roads; those floods—freshets that carried away the flimsy little wooden

bridges; hill roads that were almost cut away. It was wonderful what tight places a pair of ponies could get out of. An automobile would have been of little use to me then.

There is a recurring note also of diversity of occupation among the early physicians, and the reason is found easily in the facts that money was scarce, population was sparse and settlements were miles apart.

Physicians in those years were glad to accept wood and farm produce in payment for their services and on occasion they even requested such recompense, sometimes by means of notices in the local newspapers. Probably every rural Middle Western medical practitioner in the fifties, sixties and early seventies and even later, turned his hand at one time or another to some occupation other than the practice of medicine. Many of these men owned and operated farms, sold trees, traded horses and cattle on a considerable scale, dealt in real estate, ran mills of various sorts or held paying offices or carried on several of these undertakings at once.

The practicing physicians of Fillmore County who owned and operated drugstores were many. And in mentioning druggists and drugstores, recognition should be given to the fact that in the early years many lay druggists were themselves medical advisors of no mean merit. Among them were men well known throughout the county. A few names that have been observed repeatedly are those of J. D. Eggleston, of Chatfield, Fillmore and Wykoff; John Iverson, Thomas Madland, Knud Olson and B. N. Ohlhouse, the last a manufacturer of "Nix Bitters," all of Rushford; John D. Dain, of Fillmore, who for a year or two was in partnership with Dr. J. W. Eighmy; J. C. Nelson, of Lanesboro, later a distinguished physician of Minnesota; J. L. Williams, of Spring Valley; G. Tayntor, of Chatfield, and James P. Tibbets and Albert Weiser, prominent citizens of Preston. Of those early drugstores the stock was as varied as the stock of drugstores now. There were, of course, in the newspapers countless advertisements, many of them by these stores, of patent medicines, among which preparations the "Oil of Life" apparently was a favorite. As the Editor of the *Chatfield Democrat,* in February, 1885, pronounced, there were "many comforting words to suffering humanity. Not an ill that us weak mortals are heir to but what has its specific remedy advertised to the skies with many promises of swift and certain cure. Were one-half of them able to do what is claimed, mankind would live forever, but we go on dying off at the rate of 90,000 every twenty-four hours just the same." Although some of the physicians-druggists announced that patent medicines were on sale, many of these practitioners compounded all of their own prescriptions.

If it was logical and practical for physicians to be druggists, it was even more so for them to serve as dentists, as most of them did, because it was a long time before the average village or town had a resident dentist. There were, however, traveling dentists, whose advertisements appeared regularly in the local newspapers in the early decades. Some of these men had their headquarters in villages of the county; two were Dr. T. E. Lyons, surgeon-dentist of Chatfield, and the well-known and well-loved Dr. H. W. Eldred, of Rushford. Others came on periodical visits into the county; among these were Dr. M. J. Stalker and, from Decorah, Iowa, Dr. T. A. Watson and Dr. W. D. Kellogg. Most of these dentists warned the public to beware of imposters and quacks "who are going around the county styling themselves 'dentists.' They will spoil your teeth, rob you of your money, and in the hour of need will be found wanting." Occasionally resident physicians of the villages in which the dentists visited would vouch through the press for the character and ability of these men and would advise the public to attend to their teeth, admonishing them that "a great deal of sickness, such as neuralgia, foul stomach, and so forth," arose from decaying teeth.

In a little later period, although resident general practitioners looked after such opthalmic conditions of disease as came their way and also fitted glasses, there were traveling oculists and opticians who visited communities periodically, as did the dentists, and admitted that whatever the trouble might be with the eyes of the citizens, they could cure it.

In view of the great versatality and adaptability of the pioneer physicians it is interesting that there was, even in the earliest decades that are considered here, some slight attempt at professional specialization among them. It has been noticeable, however, that the man who advertised as a specialist, in due course changed the wording of his announcements to make it clear that he was also a competent general practitioner of medicine and surgery. Probably, in order to make a living, he found it expedient to convince the public that the specialty was an added recommendation, not his whole equipment.

Beginning in the late sixties there became apparent a change in the wording of physicians' conventional professional cards as published in the local newspapers. As the announcements of itinerant practitioners of medicine and of traveling lecturers on physiology, anatomy, health and disease became more detailed and blatant, those of the permanent men became more conservative and the expression "resident physician" was used commonly. By the early eighties the custom of publishing professional cards of any type was falling into disuse. Ethically enough in those early decades, physicians called on editors of newspapers; and the editors, although their interpretations of medical news were sometimes startling and although their championship of individual physicians was not always desirable or helpful, played no small part in the dissemination of information as to the status of medicine locally in sundry aspects. There were gratuitous editorials, in one of which challenge was made to science, when a local physiomedical practitioner, about whom more will appear later, of brief residence, asserted that toads, frogs, snakes and lizards could maintain existence and could multiply in the stomach of man, "to vindicate" by showing how they could subsist and survive there. There were announcements that Dr. Smith or Brown or Jones had obtained genuine, reliable vaccine virus against smallpox which he was prepared to furnish to all families who wished to be protected against the disease. There was mention of performance of postmortem examinations by local physicians, with dramatic descriptions of the findings and, more helpful to the cause of medicine, praise of the families of the deceased persons for permitting the necropsies to be made. There were bland editorial notes such as this: "We are misinformed as to the medical attendance upon the Norwegian who cut his throat last week. Dr. Redmon instead of Dr. Case has the case in charge, under whose care the man is rapidly recovering and thinks he had rather live than die." And, "we were misinformed as to the present critical condition of———.*
His present condition gives every reason to hope for his speedy recovery from his serious burn. Dr. Ross deserves great praise for the skill and patience he has exhibited in treating the case, which has been all the more difficult from the aggravating scrofulous constitutional habit of the patient." There were comments that betrayed the existence of animus among medical brethren, particularly between those of different schools of thought. And, notably, it was the accepted practice for physicians, through the printed column, for reason of illness, departure, or plain need of cash, to invite their debtors to "come forward and pay up." Of interest also, if not of local significance, there began to appear in the county

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*Here and elsewhere in this paper names of patients have been omitted by the writer.

newspapers, even in 1858, advertisements of medical journals; for instance, *The College Journal of Medical Science,* published in Cincinnati by Dr. C. H. Cleveland, and advertisements of medical colleges, one of which, in 1884, was the College of Physicians and Surgeons of Chicago.

In the earliest years of the county's settlement the chief occasions for services of physicians and surgeons were injuries from accidents. There were calamitous occurrences, tragic and lethal, in mills of various types. Mishaps occurred on farms, as follows, the instances taken at random from the many that were described in the local newspapers: A child was pecked viciously, to the point of death, by a large rooster; a boy chopping wood was injured on the back of his head by a heavy limb, "quite serious but not necessarily fatal"; a man stuck a five pound axe into his left instep; another broke his leg while taking horses to water; another was injured when a load of wood upset. Others were frightfully hurt and mutiliated when caught by the tumbling rod of a threshing machine; another was knocked on the head by a windlass; one man was hooked in the eye by a cow, "may lose eye." There were falls down cellars, off windmills, off wagons in runaways, and there were countless shooting accidents in hunting. There were obstetrical cases, although physicians were not always summoned in these, usually only in the event, as an early practitioner said, of " 'scare' or real difficulty." Seasonally, heatstroke and sunstroke and frostbite and freezing occurred, and there were cases of smallpox, of typhoid fever, of diphtheria, inflammatory rheumatism, consumption, inflammation of the bowels (in somewhat later years to be called "appendicitis"). Pneumonia, cancer of the stomach, and all other disorders known to man in the time and clime.

As nearly as can be determined, there was in Fillmore County prior to 1900, at widely separated times, only two hospitals, small private institutions. If there was other attempt at hospitalization of patients, it was informal and unorganized. There has been noted a time or two in newspapers of the late seventies brief reference to Dr. D. F. Powell's "Lanesboro Sanitarium." About 1896 Dr. George E. Campbell established in Wykoff a hospital which he owned and operated until he moved from the county in 1902.

In the pioneer years, and later, patients were treated for their ailments and were operated on, when emergency existed, sometimes in the physicians' offices but usually in their own homes. The kitchen table was the classic operating stand. Gradually physicians acquired improved equipment in the form of special tables and chairs to facilitate their work; occasional editorial announcement of such acquisition was made in the newspapers. Gradually also the local practitioners sought the aid of physicians and surgeons of larger towns within a radius of fifty miles who had wider experience than themselves. Incidents have been described in reminiscences and have been noted in news items of the eighties and nineties, when surgeons from Winona, La Crosse or Rochester, summoned in consultation, remained to perform surgical operations in homes, and when local physicians took their patients who required major surgical procedures to the hospitals in those larger towns. In the late nineties, as noted, and soon after the turn of the century men who had been recently graduated from the best medical schools of the Middle West began to enter practice in the villages of Fillmore County and to organize excellent private hospitals.

Organization of Medical Practice

With the close of the Civil War and the return to private practice of physicians and surgeons whose knowledge and experience had been increased and broadened by service to the wounded among the troops in the field and in military hospitals (since the Mexican War Military medical science had made great advances and military physicians and surgeons in the Civil War learned as well as served), there came an impetus to improvement in medical education and medical practice and to growth in solidarity among members of the profession. Packard, Walsh and others, have written fully about the development that made medical and surgical practice a thing quite apart from what it had been. Not all at once came the new appliances and apparatus, such as the clinical thermometer, the hypodermic syringe, the double stethoscope and the improved microscope, and their fullest use, nor the general employment of anesthetic agents, nor advances in diagnosis and the use of serums, antitoxins and vaccines, but the change had set in. Gradually, in therapeutics, calomel, opium, whiskey and the drastic purgatives yielded place to other preparations (in the eighties the coal tar products). The acceptance of the germ theory, and of antiseptics and asepsis in their turn, met opposition even in cities but especially in outlying districts and communities and particularly among the older physicians, who bitterly resented innovations in medical thought and practice, and in some few points these older men were right. "Although in time the electrical differentiation of organic disease and blood pressure apparatus brought great knowledge of patients and their ills, from the time when the tongue, the pulse, the hot or cool feeling of the patient, the taste of the urine and the general look of the stools" (Walsh) represented the data available for diagnosis, there nevertheless was much to be said for the unaided use of the special senses, and among the older practitioners were those who had wisdom not in books. They could read more than the facial expression of the patient, the appearance of the hands, the feeling of the skin and the odor in the sickroom than could some of their younger colleagues discern who had embraced all the new ancillary diagnostic aids. As one old gentleman has said, "Maybe they didn't know much by present-day standards, but anyway they could cure people."

In Fillmore County, as elsewhere, the new knowledge was felt. As time went on, the level of excellence in practice was raised, and there was presently a move toward medical education by outstanding men in the local profession who acted as preceptors to youths who aspired to medical practice. There were, of course, individual physicians who, although they favored education, as evidenced by their service on school boards, and had their points of excellence as practitioners, also had their flaws, even to slovenliness in professional conduct. One story that has come down through lay channels is about an early practitioner of the county who, after performing a postmortem examination in a rough workshop, nonchalantly filled the abdominal cavity of the cadaver with an old pair of overalls and some sawdust that he had scooped up from the floor. Of this same man an old resident of the county, a nonagenarian, has said, "Doc .... only saved one life as I know of. The druggist put up the wrong prescription, and lucky he noticed it soon enough and sent Doc out and Doc pumped out the man's stomach and saved his life. But all my folks doctored with him and they all died." Instances of professional inadequacy have been cited, among them that of the physician, newly graduated in the early eighties from a short course at a weak medical school, who was helpless and bewildered in the face of a little child's illness. The child died, to the unending heartache of the parents through long decades. The occurrence may have resulted in some good, because the father, a man of high intelligence and of professional training in another field, thereafter directed influence, which was not slight, toward the improvement of medical education, especially to the end of compulsory hospital internship before practitioners should be permitted to go into community practice. A few physicians have been recalled as drug addicts, others as habitual drinkers. One of the latter, well trained, brilliant and trusted in practice, was well aware of his shortcoming, and although when he was called in a case of serious illness he would respond promptly, he would insist on sleeping for an hour or two, on the floor if necessary, before examining the patient. And there were, around the beginning of the century, the two physicians, boon companions, who started on a hilly drive in poor weather into the country to fumigate a house in which there had been smallpox. Being a trifle overfortified, they forgot their fumigating equipment and remembered it only as they laboriously crested the last hill before their destination, whereupon they cheerfully agreed together that an old leather shoe that they discovered by the roadside, when cut up and burned in the infected room, would make as convincing a malodor as the proper agent.

A sign of the changing medical times was the occasional response of local practitioners to accounts in the public print of medical discoveries and marvelous surgical operations used in far parts of the country. These men arose, not in belligerence but in defense of the local profession and their attainments, and particularly, of the schools from which they came. When a story appeared of a wonderful repair of a broken and rebroken arm by means of removal of callus from the ends of the bones and the approximation of the ends and their fixation by the use of silver wire, by one Dr. Lane of San Francisco, Dr. Russell Lucretius Moore wrote the following letter to the editor of the *Preston Republican:*

Spring Valley, Minnesota,
December 3, 1872.

Editor, Fillmore County Republican:

Dear Sirs: In your issue of November 29 is an article described as "A wonder in surgery," by Dr. Lane, of San Francisco, not such a wonder after all to us boys who have attended "Old Rush" at Chicago, where most of us can recall as wonderful operations as this performed by our professors and teachers in Cook County Hospital and in our college clinics. In 1868 Powell and Boyue, at the hospital, performed the very counterpart of Lane's operation upon the ulna, one of the bones of the forearm, with a like good result. At the clinic of Dr. Powell's I saw him do a like job on the broken jaw of a woman, the fracture of which had failed to unite by other means. No use in going to San Francisco for wonders in surgery.

(To be Continued in the June issue)

President's Letter

NEED FOR MOVEMENT—"BACK TO SCIENTIFIC MEDICINE"

One of the most thought-provoking and action-inspiring letters which has come to my attention in many months or even years was a letter from Dr. E. L. Tuohy, President of your Association during 1945. Since it is of such vital importance to the whole profession, his permission to quote it in part, as follows, has graciously been given:

"(1) Look out for the sections of the state farthest from the central activities.

"(2) Stimulate the Councilors from these districts to become more energetic in returning the component medical societies to real medical enterprise.

"(3) Promote the growing centralization of medical service and interests in the hospitals. Extend the idea to the grouping of county society meetings about the 'hospital staff study of its own cases.'

"(4) Some day this could lead to the development of visiting staffs of pathologists, radiologists and likely other traveling specialists. Thus specialists could serve a large area rather than continuing the concentration of these dynamic teaching groups in the larger cities.

"(5) There is an abundance of medical brains in the rural districts. These brains are not focused upon that communal purpose without which individual doctors atrophy in this most dynamic period of medical development.

"In substance it is essential to get the profession back to scientific medicine. Private medicine will ultimately stand or fall on that basic issue."

Both of the first two items emphasize the necessity for as strong, cohesive, alert and well-informed organization in the hinterlands as in the larger urban centers. With access to every house in the land, the medical profession could be the most influential group in the country. As was brought out so emphatically at the last County Officers' meeting, public relations begin at home and nothing is so effective as "grass roots" letters to legislators. Yet, to perfect such an organization, it is imperative that every reputable physician in the state be a member and that each member not only be kept well informed but that he accept and discharge his full share of responsibility.

Most arresting, though, are the remaining suggestions. They point directly to the growing sphere of the hospital, and to the vital need for the continued high standard of medical care. To exploit rural hospitals as a medium for strengthening the organized medical profession, and also for raising the quality of rural medical care, is a truly colossal idea.

Effectiveness of such suggestions are seen in the enthusiastic reception of Dr. Tuohy's own clinical pathological conferences, and those at the University of Minnesota Medical School, Cornell University group, Cook County Hospital, the Mayo Clinic and innumerable others. Dr. Harvey Cushing's program of demanding that every intern write and present one scientific paper during his internship could easily be molded into the suggested program by requesting each hospital staff or society member to present one paper a year. More autopsies, clinic presentation of cases within the hospital, reports of unusual cases, group consultations, moving pictures of a clinical nature, and review of x-ray films offer limitless possibilities of good for both patients and physicians.

Up to the time of the war, University extension courses could be arranged in which members of the Medical School faculty would go to a hospital or medical society once a week. Even more recently suggestions for similar arrangements, as soon as present medical education pressures decrease, have been made within the Medical Foundation. And, undoubtedly, a multitude of other means of accomplishing the desired purpose can be arranged.

In brief, Dr. Tuohy's suggestions epitomize practical means of insuring the highest possible standard of medical care and also of keeping all physicians abreast of the remarkable progress in all branches of medicine. But, immediate action toward this desirable goal should be taken by each hospital staff, every physician, and officers of the component medical societies.

Edwin J Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE CHALLENGE OF GENERAL PRACTICE

THE general practitioner is the backbone of the medical profession, has been in the past and must continue to be in the future. He cares for an estimated 85 per cent of human ills, is capable of doing so and should continue to do so. For some 15 per cent of the ills, the specialist is essential and becomes more of a necessity as medical knowledge increases.

The specialist's work is often the more spectacular. He can do things that another man cannot. The possibility of his knowing all that is knowable in his specialty exists. Due to the rapid advance in medical knowledge, the general practitioner cannot possibly keep up with advances in all fields, but his field is much broader.

Until recent years, a doctor became a specialist by assisting a specialist, taking postgraduate training (often scanty in amount), or by simply declaring himself a specialist. Certification in the various specialties by National Boards is correcting the former unsatisfactory procedure, and certificates indicate that the holder has had certain minimal training which entitles him to rating as a specialist.

A specialist, as a rule, charges higher fees than the general practitioner, an incentive of course to invest more time and capital in postgraduate medical training.

Probably supply and demand have been the only law regulating the percentage of specialists in the past. We have the idea that today several factors have a tendency to urge a larger percentage of the profession into the specialties than is economically desirable.

In the first place, a framed certificate on the wall of the physician's office indicating certification in a certain specialty is flattering to the ego. Certification, too, makes the physician eligible to certain medical societies. Certification enables an individual to draw higher salaries in certain kinds of contract work. Certain hospital staffs are said to be limiting membership to licentiates of the specialties. If this procedure is extended, the general practitioner may find himself forced to turn over to a specialist a patient requiring hospital care. That time should not come, and the tendency to place the general practitioner at a disadvantage in regard to membership in certain medical societies and on hospital staffs is to be decried.

The hospital has a definite responsibility to the public as to the character of the medical work carried on in that hospital. It can and should make regulations requiring consultations for certain patients admitted by general practitioners and specialists when the illness is obviously beyond the ability of the general practitioner or specialist to treat. But regulations of hospital practice should not be to the detriment of the general practitioner.

Obviously, only areas of more concentrated population can support specialists. There is need for very few specialists of certain types in a whole state. The need, however, for the general practitioner in the city, as well as the sparsely populated districts, still exists. Many individuals prefer the services of a general practitioner, a physician with a broader general knowledge of medicine, for the 85 per cent of the ills to which flesh is heir. He can be relied upon to obtain consultation from the specialist when the need arises. Economically, this procedure is desirable.

There is no need for the general practitioner to feel any inferiority complex. There will always be a need for his services, both in city and country practice. There will never be a limit to the knowledge attainable by him. Occasions will often arise that will tax his ingenuity and skill—particularly in the country. At long last, a section for the general practitioner has been established by the American Medical Association which will add dignity to this group. Meetings of this section should prove popular.

Nothing should be done to discourage the general practitioner from remaining a general practitioner and the undergraduate from meeting the challenge of general practice.

DE KRUIF RECOMMENDS PROSTIGMIN

SOME favorable reports have appeared in medical literature regarding the use of prostigmin in cases of myasthenia gravis, poliomyelitis, stroke, arthritis, and spastic paralysis. Other reports have not been favorable. In other words, the value of the drug is still controversial. In this issue appears a report by John F. Pohl on his experiences with prostigmin in cerebral palsy. In brief, he could not determine that the drug was of any demonstrable value in this condition. Reports by physicians who are in a position to try out prostigmin on a number of patients suffering from these various neuromuscular conditions will eventually enable the profession to draw conclusions as to its value.

Prostigmin is a synthetic alkaloid belonging to the physostigmin group of drugs. Physostigmin, known as eserin, has been known and used for years by opthalmologists for its miotic effect and by surgeons for its stimulating effect on the intestines. Prostigmin was introduced in 1931 for its similar effect on the intestines, and four years later it was found to be effective in the symptomatic treatment of myasthenia gravis. Its symptomatic effect in this disease is said to be most dramatic. Theoretically, acetylcholine is supposed to be produced on muscle contraction at spinal motor-nerve endings and is neutralized by cholinesterase contained in the tissues. Prostigmin neutralizes the cholinesterase in the tissues and thus tends to increase the amount of acetylcholine at the motor-nerve endings, which is the site of the difficulty in myasthenia gravis. It has an anti-curare action, and atropine is its antidote. Just how prostigmin might be expected to ameliorate spastic symptoms in general is difficult to understand.

Although the value of prostigmin in the neuromuscular conditions mentioned is not established, it was the subject of an article entitled "Many Will Rise and Walk" by Paul DeKruif which appeared in the *Reader's Digest* for February. Those suffering from the aftermath of poliomyelitis, strokes, spastic paralysis, arthritis and other ills can hope for help from the use of prostigmin according to this well-known author and would-be medical authority.

This article on prostigmin is in keeping with several other articles on medical subjects which have appeared in the *Reader's Digest* in recent years. DeKruif's attitude of optimism in seizing reports of innovations in therapeutics which appear in medical literature and passing them on in a dramatic way to the public before the innovations have been firmly enough established to deserve general acceptance by the profession is misleading, to say the least. His advocacy of prostigmin for such a variety of complaints is in keeping with his article "Stamping Out Syphilis with One Day Treatment" which appeared in the December, 1943, issue of the *Reader's Digest*; with "Hope for Victims of Arthritis—Ertron" (November, 1943) ; and with "Can Man's Prime be Prolonged" (July, 1945). The fact that thousands of sufferers have their hopes falsely raised by such misleading articles does not seem to be sufficient for the owner of the *Reader's Digest,* DeWitt Wallace, to put a stop to their publication.

Those who had access to the November and December, 1945, numbers of *The New Yorker* know that Paul DeKruif is one of the numerous assistant editors in the employ of DeWitt Wallace, who owns the *Reader's Digest.* They understand, too, that only about 40 per cent of the articles that have appeared in the *Digest* in recent years are digests of articles which have appeared in other journals independently of the staff of the *Digest* editors. In other words, about 60 per cent of the articles that appear are original articles which have been written by the *Digest* editors and not published elsewhere (for instance DeKruif's) or have been "planted" in other journals gratis and abstracts run in an effort apparently to maintain the "digest" character of this phenomenal publication.

Overoptimism can be very misleading. While some of Paul DeKruif's articles have medical news value, too many fail to recognize that many a medical article which appears in print is but the personal experience of the author, and the ideas expressed must be confirmed or disproved before they can be generally accepted or rejected. Perhaps only a medically trained individual should attempt to evaluate medical literature for lay consumption.

A NEW ARMY MEDICAL LIBRARY BUILDING

Much as we are in favor of balancing the federal budget, certain expenditures on the part of the Federal government are "must" expenditures. We believe that an appropriation for the construction of a suitable building in Washington to house the Army Medical Library, formerly known as the Surgeon General's Library, is such a project.

Begun as a small collection of medical books in the office of the Surgeon General in Washington, great impetus was given in making the library the most complete medical library in the world by Dr. John Shaw Billings, who acted as librarian from 1865 to 1895. During this period, in 1887 to be exact, the present antiquated brick building which still houses the library was completed. The old structure constituted such a fire hazard that some of the more precious volumes were moved in 1942 to Cleveland, where space was provided in the Allen Memorial Medical Library for some 90,000 volumes.

In 1933 an effort to combine the Army Medical Library with the Library of Congress was prevented by the opposition of the Library of Congress, the Surgeon General and the medical profession. The proposal to locate the library at the Army Medical Center in Washington received considerable opposition a few years ago.

By 1941 Congress had appropriated $130,000 for the drawing of plans for a new Library and Museum to be located on Capitol Hill in Washington. Pearl Harbor put an end to all construction plans, although the war brought increased demands on the Library.

Some who live in the larger centers of population and have access to first class medical libraries do not realize the value of the Army Medical Library to the medical profession of the country. Long since, its volumes have been available to the profession of the country. The Library's ambition to possess all the medical books and journals published in this country, and most medical material published abroad, has well nigh been attained. The Library has afforded a center, ideal for medical research and for composing catalogues and abstracts, in addition to its being a lending library.

The late Dr. William H. Welch of Johns Hopkins University once said, "I have been asked on more than one occasion what have been the really great contributions to this country to medical knowledge. I have given the subject some thought and believe that four should be named: (1) the discovery of anesthesia; (2) the discovery of insect transmission of disease; (3) the development of the modern public health laboratory in all that the term implies; (4) the Army Medical Library and its Index-Catalogue. This Library and its catalogue are the most important of the four."

CYSTIC FIBROSIS OF THE PANCREAS

(Continued from Page 436)

torrhea, dwarfism, and chronic respiratory infection. Pathologically, it is characterized by obstruction of the ducts of the pancreas, salivary glands, and of the trachea and bronchi, with resulting secondary changes of a serious nature. Its etiology has not been proven.

The clinician would be well advised to investigate any case in which steatorrhea and respiratory symptoms are present with this diagnosis in mind. The roentgenologist can be of great assistance by recognizing the characteristic findings when these are present in the roentgenogram.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONTRACTORS VOTE TO OPPOSE COMPULSORY HEALTH INSURANCE BILLS

The Associated General Contractors of Minnesota are among the organized groups that have gone on record as opposing any system of federally administered compulsory health insurance for this country.

Expressing their beliefs in a letter to Congressmen and Senators in Washington, the contractors voiced the opinion that extensive and even increasing governmental holds over the lives of this nation's citizens, whether it be manifested as interference with the construction industry or in taking over the medical and health professions, is "inimical to the nation's welfare, although in either case, it may be clothed with high sounding objectives."

A copy of this letter has been received in the office of the Minnesota State Medical Association, since it was in answer to a suggestion made by the State Office. The background of the letter may be summed up in this way:

Early in March there was sent out from the State Medical Association office an analysis of the Wagner-Murray-Dingell bills (S-1606 and HR 4730), the purpose of which was to bring together all of the reasons why the medical profession opposes legislation which has as its object the assumption by the federal government of the medical and health facilities of the nation and seeks to set up a system of compulsory health insurance, federally administered.

The analysis was done up in packet form and included material clipped from newspapers and from the *Congressional Record*, showing the concerted effort that has been and is being made to put a system of compulsory health insurance on the statute books.

Published material was also included which opposed such legislation, and a studied and critical statement was prepared in which the pros and cons of the question were carefully examined. It was suggested that readers evaluate for themselves the Wagner-Murray-Dingell proposals and that if they felt that the proposals were not beneficial to the nation, they should write their congressmen to that effect.

Here is the letter, signed by Mr. R. J. Hendershott, Manager of the Associated General Contractors of Minnesota, which was sent to Washington:

March 22, 1946

Dear Congressman ————:

Our attention has been called to S-1606 and HR 4730, the so-called Wagner-Murray-Dingell bills, proposing a general health and medical program on the part of the Federal government, and our Board of Directors at its meeting, March 13, 1946, voted to express its opposition to the proposed legislation.

This Association has been traditionally opposed to any legislation or practice for socializing industry or the professions. We feel that the proposed program set forth in the above-mentioned bills would be competitive with the type of service now rendered by the medical professions, and would, we fear, tend to destroy that much-to-be-desired mutual confidence that exists between patient and physician. It should be remembered that these professions have made and are making wonderful advances and nothing should be done to retard that steady progress.

We have always opposed construction practices of the Federal government or other public agencies, where such practices involved the taking over of contractor functions in the performance of construction work by day labor methods, namely, the hiring of workmen and the purchasing and use of equipment of governmental agencies.

We firmly believe that such a practice, either in the construction industry, or in the medical profession, is inimical to the nation's welfare, although in either case, it may be clothed with high sounding objectives. We also firmly believe that the time has arrived for a more rapid elimination of government wartime controls over industry and labor, and the elimination of many of the government controls which have grown up in recent years.

We hope that you will understand our position and express your opposition to the proposed legislation.

Very truly yours,
R. J. HENDERSHOTT, *Manager*

DOCTORS DISCUSS PREPAID MEDICAL SERVICE WITH LAY GROUP LEADERS

Getting at grass-roots sentiment on the subject of prepaid medical service, a special committee of Minnesota physicians sat down recently in St. Paul to talk the matter over freely and frankly with invited representatives of organized labor, civic and professional, as well as allied health groups.

There were representatives present from groups such as the American Federation of Labor and the Farmers Union who have gone officially on record in favor of the Wagner-Murray-Dingell Bill. Their spokesmen frankly stated that if adequate medical care can be provided for those in the low income groups at a state or local level, the demand for federal intervention would undoubtedly subside, but until that need is met by decisive action which embraces every individual, regardless of age or of economic standing, they felt there was no alternative except to seek federal support. A representative of the Minnesota Farm Bureau Federation countered that "there were so many in-laws of the federal government now that in addition to becoming very confusing it was getting distressingly burdensome; rural people wanted no more of it."

There was little doubt at the close of the meeting that when Minnesota launches its prepaid medical service program, there will be wholehearted co-operation from all groups in the state.

WORK OF MEDICAL UNIT OF WELFARE DIVISION SHOWN IN ANNUAL REPORT

During one month—the month of January, 1946—the Social Welfare division of the state Social Security department spent $20,715.33 for medical care and public health activities, according to figures which have been released by the division.

All medical activities of the division are handled by the Medical Service unit, which is headed by Edwin J. Simons, president of the Minnesota State Medical Association.

The Medical Service unit in its recently published annual report describes its work. There are, according to the report, four special activities of the unit—services to the deaf, maintenance of tuberculosis sanatoria, care of crippled children and services to public assistance recipients.

During the past year, says the unit report, aid to speech defectives and orthopedic-plastic crippled children has been on the increase to make up for the decrease in demands for care by the indigent and tuberculous cases.

Work of Unit Intensified

The work and efforts of the entire personnel of the Medical unit has been intensified, the report states, in meeting the demands required by medical advances and the problems created by the scarcity of professional services.

In addition to administration work in connection with medical care programs, the Medical Service unit provides consultation and advice in the handling of medical and dental problems in the aid programs. It is helped in this service by professional advisory committees, particularly in the development of fee schedules, statements of policy and similar problems.

It was decided that the Chief of the Medical unit would serve as medical consultant in the administration of the Barden-LaFollette rehabilitation program, working with the director of vocational rehabilitation of the Department of Education.

Crippled Children Services Subdivided

Four programs constitute the responsibility of the Medical unit in connection with services to crippled children. These are the orthopedic-plastic program, the rheumatic-cardiac or heart program, the cerebral palsy or spastic program and the program for speech defectives.

Under the orthopedic-plastic program, the unit provides four types of service: (1) hospitalization, (2) field clinics, (3) field nursing and (4) medical social work. In addition, a register is maintained of all known children under 21 years of age diagnosed as having orthopedic or plastic disabilities. As of July 1, 1945, there were 11,052 names of children on the register; of these, 2,444 were receiving one or more of the four services.

Hospitalization of crippled children is provided for those not eligible for treatment at Gillette State hospital, as non-residents living in Minnesota and Emergency Maternal and Infant Care patients. Last year 222 of these patients got 4,781 days of hospital care.

Eighteen field clinics were held during the fall of '44 and the spring of '45. Attendance showed an increase of from 1,311 for the previous year to 1,458 last year. There was an increase of from 240 to 274 new patients for the same period.

Rheumatic-Cardiac Program Expanded

Rheumatic-cardiac program facilities were greatly expanded. A contract for providing convalescent care for rheumatic fever patients was arranged with Sheltering Arms hospital in Minneapolis, and tutoring, planned play activities, occupational therapy and transportation between Sheltering Arms and Children's hospital for clinic services were added.

There were 446 visits by children to the clinic, with 120 cases admitted for clinic service. A total of 80 children suffering from rheumatic fever or heart ailments got 6,256 days of hospital, convalescent or foster home care.

Evaluation showed the results of the cerebral palsy or spastic program to be highly satisfactory, with seven children discharged and returned to the community. In the speech program an intensive speech retraining clinic for eight postoperative cleft palate cases was conducted at the University hospitals, sponsored by the Crippled Children services. It was considered highly successful. Eight new clinics throughout rural Minnesota were organized, bringing the total of speech field clinics to eleven. Through the speech program, a total of 131 speech defectives were provided training each month.

Deaf and Tuberculous Treated

Services for the deaf include interpreting, medical care, proper selection of hearing aids, testing, counselling and training for placement, obtaining social security records and helping in social adjustment.

At the beginning of the year, 233 cases were receiving service, with 116 cases closed during the year, 62 of which were considered rehabilitated. The year saw 146 new cases referred for service of which 38 are in supervised employment, 20 closed as rehabilitated and 15 closed for other reasons.

The section for tuberculosis sanatoria was occupied with efforts to make federal funds for tuberculosis control available through the U. S. Public Health service and the Minnesota State Department of Health.

Two projects are under way, the acquisition and use of two mobile x-ray units for diagnosis of tuberculosis and the establishment of a consultative committee of tuberculosis specialists to insure a state-wide, uniformly high standard of care for tuberculosis patients.

Counties Composing Sanatorium Districts Reshuffled

In spite of anticipated increases in the number of cases of tuberculosis in Minnesota, as a result of war, there actually has been an increase of vacant beds in the sanatoria of the state. This has led to redistricting of counties composing sanatorium districts in the southern part of the state and those served by the Minnesota State Sanatorium. In this redistricting project a subcommittee of the Tuberculosis committee of the Minnesota State Medical Association is serving in a consultative capacity.

Three principal developments have been accomplished at the Minnesota State Sanatorium. The first consists in adaptation of the x-ray equipment to use for therapy. This change is expected to increase the variety and standard of treatment provided patients in the institutions. Second, the laboratory was, during the past year, fully equipped for culturing of sputum specimens and other bacteriological work, which was necessary to relieve the Minnesota Department of Health of an excessive load of such work and to permit adequate examination at a minimum cost when the mobile unit assigned to the Sanatorium becomes operative. Third, a new dining room for patients was constructed and equipped, which development is in line with the program for patients in preparation for their discharge and safe return to society.

A total of 1,775 patients were admitted to all sanatoria in the state during 1944. In the same period, 1,860 patients were discharged, 20 per cent because of death. A total of 3,489 patients were under care during the year with the 1944 census showing 1,629 cases in all sanatoria.

Minnesota Academy of Medicine

Meeting of January 9, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 9, 1946. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 by the President, Dr. S. E. Sweitzer.

There were twenty-six members and one guest present.

Minutes of the December meeting were read and approved.

The following Memorial to Dr. H. A. H. Bouman was read by the Secretary for Dr. Hynes.

HERMAN A. H. BOUMAN

1870-1945

Dr. Herman A. H. Bouman, who was a member of the Academy from 1925 until his death following a heart attack on June 18, 1945, was born in Friesland on February 14, 1870. His early youth was spent in Germany where he received his elementary education. When he was twenty his family decided to come to America and settled in Clara City, Minnesota. Dr. Bouman attended the medical school of the University of Minnesota, graduating in 1897.

Between the time of his graduation and the year 1910 when he went abroad, Dr. Bouman taught anatomy and physical diagnosis at the University for four years, and later practiced medicine and surgery in New Richmond, for four years more. Then in 1910 and 1911 he studied in Switzerland under Dr. Kocher and from that time on was always intensely interested in diseases of the thyroid gland and very skillful in prescribing for such cases. In his leisure hours his great interest was the early history of medicine. He did much studying and writing on this subject, giving particular attention to the writings of Paracelsus. Dr. Bouman was a man of very set medical and sociological opinions which sometimes led to controversies. But in his home he was a very gracious host and loved nothing more than to surround himself with friends and spend the evening in genial talk.

He was a Fellow of the American College of Surgeons, a member of the State and Hennepin County Medical societies and of the Minnesota Academy of Medicine. He was also chairman of the board of directors of St. Andrew's Hospital and an Honorary Member of the Staff of Northwestern Hospital.

In 1903 Dr. Bouman married Kirsten Peterson, who died in 1940. In 1944 he married Matilda Menzel, who is left to mourn his loss, as is a daughter, Anchen, the wife of Dr. F. A. Zinter, of Minneapolis. Three brothers also survive him: the Rev. Henry Bouman of Minneapolis; Kles of Miles City, Montana; and Bernhard, of Great Neck, New York.

Dr. Lepak called to the attention of the Academy the fact that the organization had never been incorporated and also that the constitution, he felt, needed revision. He made a motion that the Academy be incorporated but before this should take place that the constitution be amended and that the president appoint a committee immediately to take such action. Motion seconded and carried. Dr. Sweitzer appointed as the members of such committee, Drs. La Vake, Camp, Schulze, and Dr. Lepak, Chairman.

The scientific program followed.

Dr. Schulze, Saint Paul, gave his address as Retiring President. Lantern slides were shown.

THE MANAGEMENT AND END RESULTS IN FORTY-FIVE CASES OF BREECH PRESENTATION IN PRIVATE PRACTICE

ALBERT G. SCHULZE, M.D.
Saint Paul, Minnesota

Breech presentations occur in from 2.8 to 4.8 per cent of all cases of labor according to various hospital and clinic reports. There is a maternal mortality ranging from 0 to .1 per cent and a fetal mortality ranging from 3.75 per cent to 10 per cent. One hospital reports eight infant deaths in twenty-seven breech deliveries (30 per cent) and nine deaths in thirty-six private cases (25 per cent).

Much as these figures vary, all obstetricians are agreed that full term or near full term single and uncomplicated pregnancies end as breech presentations in about 3 per cent of all cases and that there is a higher maternal morbidity and mortality and a higher fetal mortality associated with that type of presentation.

There may be several reasons why this small 3 per cent of babies in utero choose to assume the breech position, but eliminating such very apparent reasons as tumors of the uterus, placenta previa and twin pregnancies, the reasons which most authors give are expressed in such terms as, "deformity of the pelvis," "contracted pelvis," "a disproportion," "lack of cephalic accommodation," "a narrow pelvis," "lack of accommodation between head and pelvis." These may be satisfactory explanations in some cases but they leave much to be desired as an explanation for all cases.

There are definite advantages associated with a cephalic presentation which are entirely absent in a breech presentation. They are not as numerous as they are important.

There are several methods of doing pelvimetry but the best pelvimeter of all is the baby's head and the best type of pelvimetry is that known as the cephalopelvic type, or the ability to press the presenting head into the maternal pelvis by pressure over the fundus of the uterus. All other methods have but a relative value but this method has absolute value. There is also the advantage of the molding or shaping of the baby's head to the maternal pelvis brought about by the uterine contractions.

The serious disadvantage presented by a breech presentation concern themselves chiefly with the possible inability of the after-coming and unmolded fetal head to enter the maternal pelvis and the probability and almost certainty of deeper lacerations and the disaster which will be associated with each of these factors. There is also the increased probability of prolapse of the cord. The membranes are prone to rupture early in labor or even before labor has set in as happened in 50 per cent of the cases to be reported. The presenting breech is always out of the pelvis at the onset of labor; the pains are poor, the descent is slow and the dilatation of the cervix is time-consuming.

A frank breech has both its advantages and its disadvantages and the same can be said about a footling presentation.

Moreover, it is very evident that no obstetrician can acquire as much experience or attain as much composure in delivering breech presentations if they occur only to the extent of three per cent as he can in delivering babies in cephalic presentation when they occur to the extent of 97 per cent. This may account for some of the higher maternal and fetal mortality.

Because of this increased maternal and fetal morbidity and mortality associated with breech presentations over cephalic presentations for the reasons stated, Titus, DeLee, Stander, Shears, Randall and many others advocate and practice the conversions of a breech to a cephalic presentation in the latter months of pregnancy in order primarily to settle the question of a possible disproportion between the fetal head and the maternal pelvis.

This manual external change in fetal polarity is not a simple procedure. Polak states "external cephalic version is permissible if it can be done without violence; the indication for change is not sufficiently urgent if this obstetrical procedure is difficult."

It is best done at about the twenty-eighth week; the patient must be relaxed but not under an anesthetic as her co-operation is important. It often requires four hands and these must work in harmony and understanding with each other.

Nor is the attempt to do a cephalic version without danger. The membranes may be ruptured and cord complications may arise. DeLee states: "The operation of version may be fatal to the mother from rupture of the uterus, of the cervix or from abruptio placentae." Shears states; "It may cause fetal death by pressure on the cord or separation of the placenta." Perhaps these men have had these experiences.

Nor is external cephalic version always successful. Stander, while not fearing any of the complications which have been mentioned, finds the only drawback to be that the baby will not stay in its newly acquired position.

In the report by Patton and Mussey from the Mayo clinic in 1940 they speak of 10 per cent of successful versions leaving the reader to conclude that failure resulted in 90 per cent of trials or no attempt was made at all; very likely the latter explanation is the correct one. In a report of 100 breech cases by Gairdner and Jackson in 1941, they speak of 17 per cent of successful versions and 9 per cent of failures in sixty-four hospital cases. They favor cesarean section if versions fail and they resorted to this type of delivery in twenty-six of their 100 cases.

One cannot have much faith in cephalopelvic disproportion as being the etiologic factor in producing a breech presentation if one deliberately performs a cephalic version in order to test nature's accuracy. Why are there not more breeches associated with contracted or borderline pelves if a disproportion is a factor? One would expect a breech presentation in every such case.

Ryder reports his experiences in 258 breech presentations. He is a great avocate of external cephalic version as soon as a diagnosis of breech presentation is made, even though it be as early as the fifth month. He has developed a fine technique but admits 7.5 per cent of failures. In cases seen early in pregnancy he reports that 5.8 per cent underwent a spontaneous version. He admits that he had a greater number of cord complications and that the baby reverted to its original breech position in one-third of his cases; that he had to reconvert to a cephalic presentation two, three, four, five and six times in a various number of cases and in one patient he did it nine times and in another he did it thirteen times.

If one is successful in doing a cephalic version in these cases, he should then be able to determine the presence or absence of a cephalopelvic disproportion. If no disproportion exists and the baby does return to its original breech position, it should not be necessary to repeat the operation and to resort to it repeatedly is unnecessary obstetrical interference. If one fails in his attempt to do a cephalic version for any reason whatsoever, that failure should not in itself be interpreted to mean that a cesarean section is the proper and justified method of delivery. That is not a warranted conclusion.

The important and practical question in this problem of breech presentations is how is one going to deliver these cases at or near full term and which will go in labor as breech cases and which are uncomplicated by associated conditions which in themselves will dictate what will be the best type of delivery.

If a cephalopelvic disproportion is the reason for breech presentations, does it not seem illogical and a waste of time and courting trouble to flirt with the situation by doing a cephalic version with its recognized dangers and to force the baby in utero to assume a position from the uncertainty and dangers of which nature seems intent on saving it? Furthermore, prophylactic version during the latter months of pregnancy is successful only in certain cases so it cannot be more than a partial solution.

It has not been my policy to resort to prophylactic external version in these cases of breech presentation but to deliver them as breeches and it is the purpose of this presentation to report my results.

In going over my records I find forty-five cases of ull term or near full term single breech presentations, wo of which I delivered by cesarean section, leaving orty-three cases delivered as breeches.

BREECH CASES

Total number of cases	45
Delivered by section	2
Delivered as breeches	43

The diagnosis of presentation and position in the atter months of pregnancy is very important in every regnant woman and in these cases the diagnoses were s follows:

DIAGNOSIS OF POSITION

Correct diagnosis before labor	33	80%
Correct diagnosis in labor	3	
Error in diagnosis	6	
No diagnosis recorded	3	

The six cases recorded as errors in diagnosis may have een real errors and again the baby may have changed ts position between the time of examination and the late of delivery. This error in diagnosis was made at ne, three, five, nine, ten and eighteen days before labor et in. That the baby in the latter months of pregnancy nay assume any one of several positions is evidenced y the numerous times that Ryder repeated his external ersions and also by the fact that he reports that onehird of his 5.8 per cent of spontaneous versions took lace in the eighth and ninth months. In several of my ases the diagnosis of a head presentation has been made t more than one prenatal visit.

AGE OF PATIENTS

Up to 20 years	2
21 to 25 years	7
26 to 30 years	20
31 to 35 years	5
36 to 40 years	6
Over 40 years	3

PRIMIGRAVIDOUS PATIENTS

30 years	2	37 years	1
31 years	1	39 years	2
33 years	1	41 years	1

GRAVIDITY OF PATIENTS

Gravida 1	21	Gravida 4	1
Gravida 2	6	Gravida 5	1
Gravida 3	11	Gravida 6	3

TYPES OF BREECH PRESENTATIONS

Frank Breeches (15 Primiparas)	24
Single Footling	7
Double Footling	6
Compound presentations	4
No mention made	4

When it comes to the stage of the actual delivery of cases of breech presentations, Titus speaks of three schools of teaching and practice: those who resort to breech extraction at full dilatation; those who assist delivery; and those who do not interfere. I fail to see the reason or justification for breech extraction just because the cervix has reached the stage of full dilatation any more than the justification for forceps delivery in cephalic presentations when the cervix happens to be fully dilated. The stage of full dilatation is not always easy to determine and in a breech presentation it is most important to have full dilatation to insure safe passage for the unmolded after-coming head.

My efforts are rather along the line of watchful readiness to render proper assistance when the right time comes. Titus does not regard a breech presentation as being an abnormality as in many such cases delivery is spontaneous but perhaps with increase in the number of lacerations, maternal morbidity and fetal mortality. As long as satisfactory progress is being made I refrain from trying to improve matters or to hasten the time of delivery.

In this group of forty-three cases there were thirty-eight patients who delivered spontaneously or without assistance or any particular difficulty but in six cases assistance to the extent of breech extraction had to be resorted to.

Cases of Breech Extraction

Case 1.—Mrs. L. E. W., aged thirty-six, gravida 3, labor nine and three-quarters hours, footling presentation, full dilatation, artificial rupture of membranes, fetal heart tones very slow, non-pulsating engorged loop of cord, breech extraction, successful resuscitation; weight of baby 11 pounds.

Case 2.—Mrs. D. U. E., aged thirty-two, gravida 1, toxic in last month, hospitalized and labor induced, developed cardiac dilatation and pulmonary edema, fetal heart tones lost, breech extraction when cervix was fully dilated and condition permitted, frank breech, traction in groin; stillbirth.

Case 3.—Mrs. N. A. U., aged twenty-four, gravida 1, labor twenty-three hours, medical induction, membranes ruptured at full dilatation, brought down anterior leg, no pulsation in cord at umbilical stage, breech extraction; weight of baby 8 pounds.

Case 4.—Mrs. I. R. W., aged thirty-one, gravida 3, labor fifteen hours, membrane ruptured before onset of labor frank breech, no satisfactory progress, anterior foot brought down, posterior arm delivered, anterior arm turned to posterior position, easy extraction, no resuscitation necessary; weight of baby 10 pounds 5 ounces.

Case 5.—Mrs. M. U. R., aged thirty-three, gravida 1, in labor three days, dry labor, pains stopped, medical induction, inertia uteri, fetal heart tones irregular, sedation and oxygen, at full dilatation brought down anterior leg, extraction as fetal heart tones were not strong, baby ashen white but resuscitated; weight of baby 8 pounds.

Case 6.—Mrs. B. U. T., aged twenty-nine, gravida 1, membrane spontaneously ruptured six hours before labor set in fifteen days before calculated date, hydramnios, primary inertia uteri, labor two and one-half days, poor response to uterine stimulation, slow dilatation, perineum ironed out, footling presentation, breech extraction, forceps for aftercoming head, third degree laceration; weight of baby 7 pounds 5 ounces.

In all other cases the Mauriceau method was resorted to in delivering the after-coming head, one knee of the obstetrician being placed on the floor.

There was one instance of each of the following cord involvements, none serious enough to be regarded as a cord complication:

Loop of cord prolapsed to the perineum,
Non-pulsating cord and extraction,
One coil about the neck,
Coil about neck and leg,
Two coils about the neck,

Two coils about neck and a true knot,
Three coils about the neck,
Two coils about the body.

It is interesting to speculate as to what might have been the fate of the baby if a cephalic version had been done or even attempted. It is at least a fair question.

In at least one hospital there is a rule in the obstetrical department that every breech delivery must be preceded by an episiotomy. I did not do an episiotomy in every case and perhaps should have done it oftener. I have learned to regard it as a very important part of every breech delivery.

EPISIOTOMIES AND LACERATIONS

No episiotomy and no laceration	15	(2 primiparas)
Episiotomy only	14	(9 primiparas)
Episiotomy and laceration	5	
No episiotomy but laceration	9	

In this group of cases, one patient died of a non-convulsive toxemia about six hours after delivery. It was the only maternal death and the breech presentation was not a factor. This makes a corrected maternal mortality of zero. Two babies were lost but neither death was due to the breech position. This makes a corrected fetal mortality of zero.

The question of maternal morbidity was approached from two angles. Taking the accepted criterion of 100.4 degrees or above on any two postpartum days as significant fever, there were only two patients who would be so classified. There were three patients who had this elevation of temperature on only one day. Two charts could not be located in the hospital record room.

The second approach to the question of morbidity was the pelvic condition of the patient at her final examination at six or eight weeks postpartum. Eight patients did not report. Without going too much into detail, the impression is gained that there is nothing unusually pathologic in these cases. The majority had normal pelves and no complaints. Perhaps the uterus was retroverted in a larger number than one usually finds but the record shows that this condition was present before or early in pregnancy in several of the cases. There was only one patient whose condition was not satisfactory. She had sustained a third degree laceration due, I feel, to a too rapid delivery of the head and she did not regain the fullest control of the sphincter muscle.

In this presentation it is not my desire to settle the question of how best to deliver cases of breech presentation at full or near full term. I am only giving my experiences. It includes forty-three cases; women of all ages and all gravidity; breeches of all types. Some women had episiotomies, some did not; some had lacerations and some did not; some had both. In six cases breech extraction had to be resorted to. There resulted a corrected maternal mortality and a fetal mortality of zero and only two cases of maternal morbidity. In all cases breeches were delivered as such, no attempt at external cephalic version having been made.

After reviewing these forty-five cases of full term breech presentations and noting the opinions and experiences of others, several obstetrical impressions are obtained which might be presented as conclusions, namely:

1. Cephalopelvic disproportion is not a satisfactory explanation as to why the baby in utero takes the breech position. There must be other reasons.
2. The dangers and the uncertainties of a prophylactic external version seem to be no less than the complications of a breech delivery.
3. When following an external cephalic version it is found that no disproportion exists, it would seem unnecessary to repeat the maneuver if the baby returns to its breech position.
4. In a multiparous woman who has had uncomplicated cephalic deliveries, it should not be necessary to do an external cephalic version if, in her next pregnancy, she has a breech presentation.
5. Inability to do an external cephalic version should not in itself be interpreted to mean that a cesarean section is the proper method of delivery. That is not a warranted conclusion.
6. Cesarean section in 26 per cent of breech cases when external cephalic version fails is an astoundingly high per centage and perhaps not fully justified.
7. An episiotomy should precede every full term breech delivery.

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Discussion

Dr. J. C. Litzenberg, Minneapolis: I would like to compliment Dr. Schulze on his handling of these breech cases with a corrected mortality of zero for the mother and child. He had no reason for being embarrassed by my presence. My results are certainly no better and I doubt if they are as good and his conservative attitude is certainly to be commended. I have disagreed with him on one point in the past and that is doing external version. He was in my department during our existence of teaching together and he will remember that I always taught that an external version was indicated only if it was easy. If it is easy, it is all right but if it is difficult it is too dangerous. I want to congratulate Dr. Schulze on his conduct of breech presentation and his results and certainly his results justify his conservative attitude. Most babies should be delivered as breeches. During my stay in Vienna there was a period during which no breech was given assistance. They modified that later in certain cases, just as Dr. Schulze has done.

Dr. R. T. La Vake, Minneapolis. This is an excellent and timely paper. Dr. Schulze's experience with external version has been similar to mine, and I think to that of most men. External version has its definite dangers as outlined by the essayist and Dr. Litzenberg.

Cesarean section in breech presentation should require the same indications as are required in vertex presentation. Where a slight doubt exists, in the case of a young woman, it is my opinion that her whole future is better served by a trial of labor and not by an elective cesarean, which may unnecessarily jeopardize her future obstetrical possibilities by a scar in the uterus. This was Dr. Cragin's philosophy and my experience and observations have corroborated its wisdom.

Men will not fear breech presentation if they follow Dr. Schulze's rule of nonintervention except for definite valid indications on the part of mother and child, after the cervix is thoroughly dilated: if they have aftercoming head forceps at hand, and if they have trained assistants. Of all operations in obstetrics, breech delivery is the operation whose results are most influenced by the character of the available assistants. For twenty years, two of us have assisted each other in every breech delivery and our results have approximated our vertex results. The importance of trained assistants cannot be too greatly stressed.

Dr. John A. Haugen, Minneapolis (by invitation): I would like to congratulate Dr. Schulze on his fine presentation. His summaries emphasize the value of careful determination of position and presentation at the prenatal visits. His policy of non-interference" as long as there is progress must have a great deal to do with the splendid results obtained.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

MALARIA IN MINNESOTA

(Continued from Page 428)

after transfusion with blood from an ex-serviceman or other person who has been in a malarious area, the patient manifests chills and fever, thick smears should immediately be examined for the presence of plasmodia.

As a result of returning personnel, infected with plasmodia, we may expect to see a few satellite cases of malaria in Minnesota. An attempt should be made to find the person acting as the reservoir, who will in all probability reside near by; anopheline mosquitoes do not fly far for their blood meal. Programs directed toward eliminating anopheline mosquitoes in the state will have their advocates, but in Minnesota, the benefits derived will probably not offset the cost. Malaria now, as in the past, will burn itself out.

PERFORATION OF ESOPHAGUS

(Continued from Page 443)

neck increased. The possibility of a ruptured esophageal carcinoma was considered. His temperature became elevated and he expired on the third day after admission. An autopsy showed a perforation of the esophagus into the left pleural cavity. There was a linear ulceration of the esophagus just above the diaphragm (Fig. 1). The surrounding esophagus in this region showed an acute esophagitis. Microscopically the wall was necrotic and infiltrated with an acute inflammatory exudate. There was no evidence of any neoplasm or ectopic gastric mucosa. There was also a chronic duodenal ulcer.

In summary, all three of these patients were old men. Two of them had chronic duodenal ulcers. The third frequently took bicarbonate of soda for heartburns. I think that we can conclude that all three of them suffered from an acute esophagitis prior to the perforation of the esophagus. Subcutaneous emphysema was present in two of the cases. This finding together with the x-ray evidence of fluid in one pleural cavity should establish the diagnosis. We have good reason to believe that the third patient would have recovered following surgery had he not developed a fatal pulmonary embolus.

Colonel Francis R. Dieuaide, up to recently Chief of the Tropical Disease Treatment Branch of the Surgeon General's Office, has been named Scientific Director of the Life Insurance Medical Research Fund, it was announced today by M. Albert Linton, chairman of the Fund.

Dr. Dieuaide, who received the Legion of Merit for his supervision of the treatment of malaria and other tropical diseases in the Army, is now on terminal leave. He will assume his duties with the Life Insurance Fund on April 1. Before going into the Medical Corps in 1943, Dr. Dieuaide was Clinical Professor of Medicine at the Harvard Medical School, a post which he is resigning.

The Life Insurance Medical Research Fund was established last year to make grants to universities and medical schools for research on diseases of the heart and related diseases. The fund plans to make grants of more than $3,000,000 for this purpose over the next five years. A total of 147 life insurance companies in this country and Canada are supporting the fund.

Minnesota State Medical Association

Ninety-Third Annual Session

Saint Paul Municipal Auditorium, Saint Paul, Minnesota

May 20, 21 and 22, 1946

ANNOUNCEMENTS

Scientific Cinema—Please note that scientific motion pictures will be shown in the West Arena before each morning and afternoon session, at the conclusion of Monday and Tuesday sessions and at each intermission. Provided through the courtesy of the Medical Film Guild, these films present refresher courses in fundamental medical problems in a wide range of subjects.

Luncheons—Twenty Round Table Discussion Luncheons have been arranged for Tuesday and Wednesday, May 21 and 22, at the Lowry and Saint Paul Hotels. Tickets must be purchased in advance for these luncheons. Lists of subjects and leaders are printed in this program and on the reservation cards mailed with the program. Attendance at each luncheon is limited to thirty, and late comers will be accommodated according to their choice if limits have not already been reached. Tickets $1.25.

Annual Banquet—The annual banquet for members, guests and their wives will be held at the Hotel Saint Paul, Tuesday evening, May 21, at 7 p.m. James Lewis Morrill, LL.D., President of the University of Minnesota, and Edwin J. Simons, President of the Minnesota State Medical Association, will be banquet speakers. Tickets $2.50.

Guest Speakers—We are indebted to the following societies for guest speakers at this meeting:

The Northwestern Pediatrics Society—Speaker, Henry G. Poncher, Professor of Pediatrics, University of Illinois, Chicago, Ill.

The Minnesota Radiological Society—Speaker, Byrl R. Kirklin, Section on Roentgenology, Mayo Clinic, Rochester, who will deliver the annual *Russell D. Carman Memorial Lecture* in Radiology.

The Northern Minnesota Medical Association—Speaker, M. Edward Davis, Department of Obstetrics and Gynecology, Chicago Lying-in Hospital of the University of Chicago, Chicago, Illinois.

The American College of Chest Physicians—Speaker, L. L. Sanford, Muirdale Sanatorium, Milwaukee, Wisconsin.

Saint Paul Surgical Society—Speaker, George M. Curtis, Professor of Surgery, Ohio State University, Columbus, Ohio.

Academy of Ophthalmology and Otolaryngology—Speaker, Joseph A. Sullivan, Toronto, Ontario, Canada, and Elmer A. Vorisek, Chicago, Illinois.

Other guest speakers at this meeting:

F. H. Arestad, Council on Medical Education and Hospitals, American Medical Association, Chicago.

Mr. Graham L. Davis, Hospital Director, W. K. Kellogg Foundation, Battle Creek, Michigan.

Newell C. Gilbert, Professor of Medicine, School of Medicine, University of Chicago, Chicago, Illinois.

Mr. James A. Hamilton, Hospital Consultant, Yale University, New Haven, Connecticut.

Mr. Gottlieb R. Magney, architect, Minneapolis, Minnesota.

William D. Stovall, Director, State Laboratory of Hygiene, Service Memorial Institute, Madison, Wisconsin.

Medical Women's Luncheon and Dinner—The American Medical Women's Association, Minnesota Branch, will hold a luncheon meeting at the Young Women's Christian Association, situated on Fifth Street across from the Auditorium, Monday, May 20, at 12:15 p.m. Monday evening there will be a dinner at the Women's City Club, 305 St. Peter Street. All women physicians are invited to both of these meetings. Make reservations in advance through Nellie N. Barsness, 540 Lowry Medical Arts Building, Saint Paul 2. Tickets $1.50.

Medal—The Southern Minnesota Medical Association will present its annual medal for the best scientific exhibit presented by an individual physician at this meeting. Presentation will be made at the banquet, Tuesday evening, May 21, at Hotel Saint Paul.

Fifty Club—This year's candidates for election to Minnesota's "Fifty Club" will be honor guests of the Association at the 93rd Annual Banquet to be held Tuesday, May 21, at 7 p.m. at Hotel Saint Paul. Presentation of lapel buttons and certificates to candidates who have practiced medicine for 50 years in Minnesota will be a feature of the banquet program.

Technical Exhibits—This year's exhibit will be one of the largest in the Association's history. On display in the St. Paul Auditorium Arena, the exhibit plays an important part in the interest and value of every state meeting. The revenue from sale of exhibit space makes possible the high quality of scientific program and events characteristic of Minnesota meetings. Every convention visitor should make a point of visiting the technical exhibits.

Woman's Auxiliary—Wives of physicians attending the meeting may register and secure programs at the Women's Headquarters in Hotel Lowry. There tickets will be available for the various social functions and meetings. All visiting women are cordially invited to attend the special events, arranged by hostesses of the Ramsey County Auxiliary.

Golf—The annual Golf Tournament of the Minnesota State Medical Association will be held Sunday, May 19, at the White Bear Yacht Club. All medical golfers are urged to enter and compete for the attractive prizes that have been donated for winners.

Medical Art Exhibit—A collection of 300 outstanding original oils, water colors and drawings, the work of 17 foremost American artists, from the famed Abbott Collections of Army and Navy Medical Paintings, will be exhibited in the Auditorium Arena. The paintings present vividly an authentic record of medicine's part in the winning of World War II, showing scenes from the home front and from the battlefields. The Association is indebted to Abbott Laboratories, which commissioned the artists, for lending the exhibit to the Association for showing at this time.

Saint Paul Surgical Society—The Society is sponsoring a special dinner meeting Monday evening, May 20, to which ALL physicians are cordially invited. Guest speaker is the noted surgeon, George Morris Curtis, Professor of Surgery at Ohio State University, who will speak on the subject "Iodine and the Thyroid Gland." A cocktail hour at 6 p.m., sponsored jointly by the Surgical Society and the Ramsey County Medical Society, to be held in the Windsor Room of Hotel Saint Paul, will precede the dinner, which is being served in the Continental Room.

Minnesota Academy of Ophthalmology and Otolaryngology—The Academy will be host to its members at golf on the afternoon of Monday, May 20, and will hold its annual dinner meeting at the Minnesota club that evening. Guest speaker will be Joseph A. Sullivan, Toronto, Canada, who will speak on "The Symptom Complex of Labyrinthine Vertigo."

SPECIAL SESSIONS

In addition to the general sessions to be held Monday, Tuesday and Wednesday in the Auditorium theater, there will be three special sessions to be held in the morning of each of the three convention days and a special conference, set for the afternoon of the third day.

Monday, May 20, 9 a.m.—The Minnesota Academy of Ophthalmology and Otolaryngology will sponsor a special program in Stem Hall at the St. Paul Auditorium on Monday at 9 a.m. This program is open to all convention visitors. For details, see program listings.

Tuesday, May 21, 9 a.m.—A special program on orthopedic and fracture surgery has been arranged for Tuesday at 9 a.m. This program will be given in Stem Hall and will recess from 10:15 a.m. to 11 a.m. at the same time as the general session, so that those who attend may visit exhibits, demonstrations and the Scientific Cinema. All convention visitors are welcome to attend this session. Details are given with the program listings.

Wednesday, May 22, 9 a.m.—The American College of Chest Physicians is sponsoring a session on chest diseases, Wednesday at 9 a.m. in Stem Hall. This session will recess also from 10:15 to 11 a.m. Convention visitors may attend. For details, see the program listings.

Planning the Modern Hospital—A special conference on this very timely subject will conclude the program Wednesday, May 22, from 2 to 5 p.m. Nationally known authorities will be present to discuss various important phases of the local and national problem. Members of the Minnesota Hospital Association and allied organizations, city planning boards, social welfare workers, school authorities and representatives from various lay, professional, civic and organized labor groups will be invited to attend.

DEMONSTRATIONS

A program of demonstrations, to be held in Booths D-1 and D-2 in the Auditorium Arena, has been arranged for each intermission period and immediately preceding each general session on Monday, Tuesday and Wednesday, May 20, 21 and 22.

D-1 Epidemic Ringworm
Minnesota State Department of Health

D-2 Blood, Blood Substitutes and Venipuncture
Committee on First Aid and Red Cross
Minnesota State Medical Association

In addition, on Tuesday, May 21, M. Edward Davis of Chicago will give two obstetrical demonstrations, the first at 12:15 p.m. at a Round Table Luncheon at Hotel Saint Paul, the second, also at Hotel Saint Paul, at 5 p.m. in the Windsor Room.

SCIENTIFIC PROGRAM

Monday, May 20

Section I—General Session

A.M.

8:00 Scientific Cinema................West Arena
Visit Scientific and Technical Exhibits....Arena

8:30 Demonstrations—Booths D-1 and D-2

9:00 **Jaundice**................Auditorium Theater
- Diagnosis and Medical Management—Frederick W. Hoffbauer, University Hospitals, Minneapolis
- Surgical Treatment of Obstructive Lesions at the Head of the Pancreas—John M. Waugh, Rochester

9:40 **Brucellosis**
- Clinical Aspects—Wendell H. Hall, University Hospitals, Minneapolis
- Methods of Control—Willard L. Boyd, D.V.M., Division of Veterinary Medicine, University of Minnesota Farm School

10:15 *Intermission*

Scientific Cinema ....West Arena
Visit Scientific and Technical Exhibits....Arena
Demonstrations—Booths D-1 and D-2

11:00 **Coronary Heart Disease**
- Emergency Treatment—Royal V. Sherman, Red Wing
- Prognosis and Life Adaptation—Arlie R. Barnes, Rochester
- Coronary Heart Disease—The Occupational Disease of Doctors—Newell C. Gilbert, Professor of Medicine, School of Medicine, University of Chicago

Afternoon

P.M.

1:00 Scientific Cinema................West Arena
Visit Scientific and Technical Exhibits..Arena

1:30 Demonstrations—Booths D-1 and D-2

2:00 **Military Disease in Civilian Life**
- Tropical Diseases—Thomas B. Magath, Rochester
- Malaria—Donald McCarthy, Minneapolis
- The Bacillary Dysenteries—Joseph F. Borg, Saint Paul
- Preventive Procedures and Practical Suggestions—Gaylord W. Anderson, University of Minnesota

3:15 *Intermission*

Scientific Cinema................West Arena
Visit Scientific and Technical Exhibits..Arena
Demonstrations—Booths D-1 and D-2

4:00 Russell D. Carman Memorial Lecture
Auditorium Theater
- The Outlook for Postwar Medicine as Seen by a Radiologist—Byrl R. Kirklin, Rochester

5:00 Scientific Cinema...................West Arena
Visit Scientific and Technical Exhibits.....Arena
Demonstrations—Booths D-1 and D-2

6:30 **Saint Paul Surgical Society**
(Listed under Section II, Special Session)

Monday, May 20

Section II—Special Session

A.M.

9:00 **Minnesota Academy of Ophthalmology and Otolaryngology** ....Stem Hall

Evaluation of the Newer Therapeutic Agents in Ophthalmology—Elmer Vorisek, Chicago, Illinois

10:00 Pentothal Sodium Anaesthesia in Cataract Surgery—James S. Reynolds, Minneapolis

10:20 Some Experiences in the Treatment of Chronic Mastoid Diseases—Eugene McElmeel, Senior Resident in Otolaryngology at University of Minnesota

10:35 Case Studies—Wilfred Bushard, Senior Resident in Ophthalmology at University of Minnesota

11:00 The Effect of Flight Upon the Ear—Joseph A. Sullivan, Toronto, Canada

P.M.

6:30 **Saint Paul Surgical Society**..Hotel Saint Paul

Iodine and the Thyroid Gland—George Morris Curtis, Professor of Surgery, Ohio State University

A special dinner meeting will be held at the Hotel Saint Paul, sponsored jointly by the Saint Paul Surgical Society and the Ramsey County Medical Society. The guest speaker, George Morris Curtis, Professor of Surgery at Ohio State University, will discuss the newer factors that are being added to the iodine story and the clinical applications of the scientific findings. Dr. Curtis is an outstanding surgeon who has done extensive research work in connection with the thyroid gland.

Tuesday, May 21

Section I—General Session

A.M.

8:00 Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

8:30 Demonstrations—Booths D-1 and D-2

9:00 **Thrombophlebitis and Postoperative Emboli** Auditorium Theater

Surgical Treatment of Thrombophlebitis—John R. Paine, University of Minnesota

Dicumarol and Heparin—Nelson W. Barker, Rochester

9:45 **Surgical Treatment of Bronchiectasis**

Thomas J. Kinsella, Minneapolis

10:15 *Intermission*

Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

Demonstrations—Booths D-1 and D-2

11:00 **Sulfonamides and Antibiotics in General Practice**

Walter S. Neff, Virginia

Penicillin

John F. Briggs, Saint Paul

Streptomycin

Wallace E. Herrell, Rochester

P.M.

12:15 **Round Table Luncheons**......Saint Paul and Lowry Hotels

Afternoon

1:00 Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

1:30 Demonstrations—Booths D-1 and D-2

2:00 **Obstetrics for the General Practitioner**

Treatment of Obstetrical Shock—Russell J. Moe, Duluth

Rh Factor and Blood Transfusions—Rudolph W. Koucky, Minneapolis

Modern Management of the Third Stage of Labor and the Prevention of Postpartem Hemorrhage—M. Edward Davis, Department of Obstetrics and Gynecology, Chicago Lying-in Hospital

3:15 *Intermission*

Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

4:00 **Pediatric Hematology**

Henry G. Poncher, Professor of Pediatrics, University of Illinois, Chicago

5:00 Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

Demonstrations—Booths D-1 and D-2

Obstetrical Demonstration........Windsor Room Hotel Saint Paul

M. Edward Davis, Department of Obstetrics and Gynecology, Chicago Lying-in Hospital

7:00 Annual Banquet (Listed under Section II, Special Session)

Tuesday, May 21

Section II—Special Session

A.M.

9:00 **Orthopedic and Fracture Surgery**..Stem Hall

Myron O. Henry, Minneapolis, Chairman

Newer Methods Developed in the Treatment of Chronic Infections with Special Reference to the Treatment of Osteomyelitis—Edward T. Evans, Minneapolis

Dysplasias of the Hip Joint—Vernon L. Hart, Minneapolis

Fracture—Dislocations of the Cervical Spine S. D. Houkom, Duluth

10:15 *Intermission*

Scientific Cinema..................West Arena

Visit Scientific and Technical Exhibits....Arena

Demonstrations—Booths D-1 and D-2

11:00 **Orthopedic and Fracture Surgery,** Continued ....Stem Hall

Fractures of the Elbow Joint in Children—D. L. McCain, St. Paul

Plantar Neuromas, Morton's Toe—W. H. Bickel, Rochester

P.M.

12:15 **Round Table Luncheons**

Thiouracil—E. B. Flink, University of Minnesota

Newer Aspects of Allergies—E. M. Rusten, Minneapolis

Current Problems in the Field of Ophthalmology and Otolaryngology—K. C. Wold, St. Paul

Newer Treatment in Burns—H. Waltman Walters, Rochester

Diabetes—J. R. Meade, Saint Paul

Esophageal Obstructions—N. Logan Leven, Saint Paul

Amino Acids—R. L. Varco, University of Minnesota

Arthritis—Charles H. Slocumb, Rochester

Edema and Diuretics—F. J. Hirschboeck, Duluth

Obstetrical Demonstration—M. Edward Davis, Chicago

7:00 **Annual Banquet**............Hotel Saint Paul

Presiding: H. B. Zimmermann, Saint Paul, President, Ramsey County Medical Society

Introduction of Mrs. M. S. Henderson, Rochester, President, Woman's Auxiliary

Presentation of "Fifty Club" Certificates

Presentation of Southern Minnesota Medical Association Medal

President's Address: Edwin J. Simons, Swanville, President, Minnesota State Medical Association

Address: James L. Morrill, LL.D., President, University of Minnesota

Wednesday, May 22

Section I—General Session

A.M.

8:00 Scientific Cinema.....................West Arena
Visit Scientific and Technical Exhibits....Arena

8:30 Demonstrations—Booths D-1 and D-2

9:00 **Urology**.................Auditorium Theater
Transurethral and Suprapubic Operation in Prostatic Obstruction—Charles D. Creevy, Minneapolis
Orchiectomy and Hormones in Prostatic Carcinoma—Philip F. Donohue, Saint Paul

Endocrine Therapy, Practical Suggestions
Edward H. Rynearson, Rochester

10:15 *Intermission*
Scientific Cinema.....................West Arena
Visit Scientific and Technical Exhibits....Arena
Demonstrations—Rooms D-1 and D-2

11:00 **The Value of the X-Ray Examination of the Ruptured Intervertebral Disc**
Harold O. Peterson, Saint Paul

11:15 **Nutritional Status of Repatriated War Prisoners**
James R. Kingston, Coleraine

11:30 **Reactions Following Blood Transfusions—Their Control and Prevention**
William D. Stovall, Director, State Laboratory of Hygiene, Service Memorial Institute, Madison, Wis.

P.M.

12:15 **Round Table Luncheons**......Saint Paul and Lowry Hotels

Afternoon

1:00 Scientific Cinema.....................West Arena
Visit Scientific and Technical Exhibits....Arena

1:30 Demonstrations—Booths D-1 and D-2

Planning the Modern Hospital of Tomorrow

2:00 Planning the Hospital for Community Service—Mr. Graham L. Davis, Hospital Director, W. K. Kellogg Foundation, Battle Creek, Michigan
Medical Service in the Community Hospital—F. H. Arestad, Council on Medical Education and Hospitals, American Medical Association, Chicago
Financing the Establishment of a Small Hospital—Mr. James A. Hamilton, Hospital Consultant, Yale University, New Haven, Connecticut
Constructing the Modern Hospital—Mr. Gottlieb R. Magney, Minneapolis
The Minnesota Hospital Survey Program, A Report—Viktor O. Wilson, Director, The Minnesota Hospital Survey Program

Section II—Special Session

A.M.

9:00 **American College of Chest Physicians** Stem Hall
Diseases of the Esophagus—Herbert W. Schmidt, Rochester
The Importance of Isolation of All Positive Cases of Tuberculosis—Bernard J. Terrell, Nopeming Sanatorium, Nopeming
Modern Treatment of Empyema—Thomas J. Kinsella, Minneapolis

10:15 *Intermission*
Scientific Cinema...................West Arena
Visit Scientific and Technical Exhibits....Arena
Demonstrations—Booths D-1 and D-2

11:00 **American College of Chest Physicians,** Continued ....Stem Hall
The Accuracy of Cultures of Pulmonary Secretions in Evaluating Activity in Pulmonary Tuberculosis—L. L. Sanford, Muirdale Sanatorium, Milwaukee, Wisconsin

P.M.

12:15 **Round Table Luncheons**
Tuberculosis, Mass Radiography—G. A. Hedberg, Nopeming Sanatorium
Poliomyelitis—M. E. Knapp, Minneapolis
Ulcerative Colitis—J. A. Bargen, Rochester
Rheumatic Fever—Paul F. Dwan, Minneapolis
Digitalis Preparations and Quinidine—G. E. Fahr, Minneapolis
Anesthesia—J. S. Lundy, Rochester
Fungus Diseases—H. E. Michelson, Minneapolis
Dermatology—F. W. Lynch, Saint Paul
Varicose Veins—H. O. McPheeters, Minneapolis
Surgery of the Extra-hepatic Duct System—H. B. Zimmermann, Saint Paul

SCIENTIFIC EXHIBITS

American Association of Medical Social Workers

Approach to Nursing Needs
Minnesota Nurses and Public Health Nurses Associations

Blue Cross Community Plan for Hospital Care
Minnesota Hospital Service Association

Division of Public Institutions
Royal C. Gray and H. A. Burns

Division of Vocational Rehabilitation
Minnesota State Department of Education

Experimental and Clinical Epilepsy
E. Gellhorn, Laboratory of Neurophysiology, University of Minnesota

Extrapleural Pneumothorax and Oleothorax
F. F. Callahan
Minnesota State Sanatorium, Ah-Gwah-Ching

The General Practitioner Sees the Cancer Patient First!
Minnesota Cancer Society, Inc.

Hereditary Eye Diseases
Minnesota Society for the Prevention of Blindness

Hyperfunction of the Adrenal Cortex
Theodore E. Bratrud and W. H. Thompson
Departments of Pathology and Pediatrics
University of Minnesota

Mayo Foundation of Medical Education and Research
(1) Accidents on the Farm and How They Happen—H. H. Young and R. K. Ghormley
(2) Surgical and Postoperative Treatment of Vesicovaginal Fistulas—V. S. Counseller and F. S. Sluder
(3) Certain Types of Uterine Neoplasms—M. B. Dockerty
(4) Technic of Pedicle Grafts to Deep Skin Defects of the Foot and Ankle—R. K. Ghormley

The Menace of Rats
American Medical Association

Minnesota Hospital Study Committee
Viktor O. Wilson and Mr. Ray Amberg

Minnesota Public Health Association

Professional Pharmacy
Minnesota State Pharmaceutical Association

Questions and Answers on the Veterans Administration Program
M. C. Cecka, Contact Officer

Routine Color Photography
Kano Ikeda
Charles T. Miller Hospital

St. Louis County Tuberculosis Survey
R. J. Davies, G. A. Hedberg, Mario Fischer
Nopeming Sanatorium

The Ulcer Problem
Owen H. Wangensteen
Department of Surgery, University of Minnesota

Minnesota State Medical Association

Roster 1946

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WINONA COUNTY

George Loomis, M.D.	Winona
Herbert Heise, M.D.	Winona
R. B. Tweedy, M.D.	Winona

WRIGHT COUNTY

T. J. Catlin, M.D.	Buffalo
L. H. Bendix, M.D.	Annandale
R. D. Thielen, M.D.	St. Michael

YELLOW MEDICINE COUNTY

E. R. Hudec, M.D.	Echo
P. G. Schmidt, Jr., M.D.	Granite Falls

(No committees have been appointed in the following counties: Cook and Lake of the Woods.)

Woman's Auxiliary
to the
Minnesota State Medical Association

OFFICERS

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Mrs. M. S. Henderson	*President-Elect*	Rochester
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Mrs. Martin Aune	*Treasurer*	Minneapolis
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Mrs. S. S. Hesselgrave	*Parliamentarian*	Center City

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Archives—Mrs. S. C. G. Oeljen	Waseca
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Social—Mrs. Hugh Beals	Saint Paul
War Service—Mrs. L. H. Bendix	Annandale

District Councilors

DISTRICT NO. 1

L. A. Buie, M.D. . . . . Rochester
Counties—Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

DISTRICT NO. 2

L. L. Sogge, M.D. . . . . Windom
Counties—Cottonwood, Faribault, Jackson, Martin, Murray, Nobles, Pipestone, Rock, Watonwan.

DISTRICT NO. 3

C. M. Johnson, M.D. . . . . Dawson
Counties—Big Stone, Brown, Chippewa, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Meeker, Pope, Redwood, Stevens, Swift, Traverse, Yellow Medicine.

DISTRICT NO. 4

A. E. Sohmer, M.D. . . . . Mankato
Counties—Blue Earth, Carver, Le Sueur, McLeod, Nicollet, Renville, Scott, Sibley, Waseca.

DISTRICT NO. 5

E. M. Hammes, M.D. . . . . Saint Paul
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington.

DISTRICT NO. 6

A. E. Cardle, M.D. . . . . Minneapolis
Counties—Hennepin, Wright

DISTRICT NO. 7

W. W. Will, M.D. . . . . Bertha
Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena.

DICTRICT NO. 8

W. L. Burnap, M.D. . . . . Fergus Falls
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Otter Tail, Pennington, Polk, Red Lake, Roseau, Wilkin.

DISTRICT NO. 9

F. J. Elias, M.D. . . . . Duluth
Counties—Carlton, Cook, Itasca, Lake, St. Louis.

MINNESOTA STATE MEDICAL ASSOCIATION

COUNTY SOCIETY ROSTER

Key to Symbols: *Deceased; †Affiliate or Associate; ‡In Service

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month
Annual meeting in May
Number of Members: 34

President
Haes, Jay ....Vernon Center

Secretary
Butzer, J. A................Mankato

Andrews, R. N..............Mankato
Butzer, J. A................Mankato
Dahl, G. A..................Mankato
Denman, A. V...............Mankato
†Edwards, R. T.....Big Fork, Mont.
Franchere, F. W.......Lake Crystal
Fugina, G. R...............Mankato
Haes, J. E..........Vernon Center
Hankerson, R. G.....Minnesota Lake
Hassett, R. G..............Mankato
Hoeper, P. G...............Mankato
Howard, M. I...............Mankato
Huffington, H. L...........Mankato
Jones, O. H................Mankato
Kaufman, W. B.............Mankato
‡Kearney, R. W............Mankato
Kemp, A. F.................Mankato
Liedloff, A. G..............Mankato
Luck, Hilda ....Mankato
Macbeth, J. L..............St. Clair
Mickelson, J. C.............Mankato
Miller, V. I.................Mankato
Morgan, H. O................Amboy
Penn, G. E..................Mankato
Samuelson, L. G...........Mankato
Schlesselman, J. T.........Mankato
Schmidt, P. A.........Good Thunder
Schmitz, A. A..............Mankato
Sohmer, A. E...............Mankato
Stillwell, W. C..............Mankato
Troost, H. B................Mankato
Vezina, J. C................Mapleton
Wentworth, A. J............Mankato
Williams, H. O.........Lake Crystal

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties
Regular meetings, first Thursday of month
Annual meeting, first Thursday in November
Number of Members: 32

President
Gardner, V. H.............Fairmont

Secretary
Boysen, H..................Fairmont

*Bailey, H. B..............Fairmont
Bailey, R. B...............Fairmont
Barr, W. H...................Wells
Bergen, C. T...............Bricelyn
Boysen, Herbert............Madelia
Chambers, W. C.........Blue Earth
Cooper, M. D............Winnebago
‡Demo, P. W..................Wells
Farrish, R. C..............Sherburn
Fisher, I. I.................St. Paul
Gardner, V. H.............Fairmont
Hanson, Lewis.................Frost
Havel, T. E.............Blue Earth
Heimark, J. J.............Fairmont
†Holm, P. F..................Wells
Hunt, R. C................Fairmont
Hunt, R. S................Fairmont
Hunte, A. F..............California
‡Johnson, D. W...........Fairmont
Krause, C. W.............Fairmont
McGroarty, J. J..............Easton
Mills, J. L...............Winnebago
Parsons, R. L.............Monterey
Rowe, W. H...............Fairmont
Russ, H. H..............Blue Earth
Sommer, A. W...............Elmore
Sybilrud, H. W............Bricelyn
Thayer, E. A................Truman
Vaughan, V. M..............Truman
Virnig, M. P...................Wells
Wilson, C. E............Blue Earth
Zemke, E. E...............Fairmont

CAMP RELEASE MEDICAL SOCIETY

Chippewa, Lac Qui Parle and Yellow Medicine Counties
Regular meetings monthly
Annual meeting, December
Number of Members: 28

President
Kath, R. H.............Wood Lake

Secretary
Boody, G. J., Jr.............Dawson

Bergh, L. N............Montevideo
Boody, G. J., Jr.............Dawson
Borgerson, M. A........Hanley Falls
‡Burns, F. M..................Milan
Burns, M. A..................Milan
Foshager, H. T...........Clara City
Guilbert, G. O......Wood, Wisconsin
Hauge, M. I..............Clarkfield
Holmber, L. J.................Canby
Hudec, G. R...................Echo
Johnson, C. M..............Dawson
Johnson, V. M..............Dawson
†Jordan, Kathleen.......Granite Falls
Jordan, L. S...........Granite Falls
Kath, R. H.............Wood Lake
Kaufman, W. C............Appleton
Lee, W. N.................Madison
Lima, Ludvig............Montevideo
Lima, L. R., Jr.........Montevideo
Minge, R. K..............Clarkfield
Nelson, M. S...........Granite Falls
Owens, W. A...........Montevideo
Pertl, A. L....................Canby
Roust, H. A.............Montevideo
Schmidt, P. G., Jr......Granite Falls
Smith, L. G.............Montevideo
Westby, Magnus............Madison
Westby, Nels...............Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 23

President
Duncan, J. W.............Moorhead

Secretary
Hendrickson, R. R........Lake Park

†Aborn, W. H.................Hawley
Carman, J. E..........Detroit Lakes
Duncan, J. W..............Moorhead
Ellington, A. R........Detroit Lakes
*Gosslee, G. L............Moorhead
Hagen, O. J...............Moorhead
Haight, G. G...............Audubon
Hendrickson, R. R........Lake Park
Humphrey, E. W..........Moorhead
Ingebrightson, E. K. G.....Moorhead
Johnson, Olga H...........Moorhead
Larson, Arnold........Detroit Lakes
Moberg, C. W.........Detroit Lakes
Oliver, James.............Moorhead
Olsen, Gertrude E.......Georgetown
Otto, H. C....................Frazee
Rice, H. G..................Moorhead
Rutledge, L. H........Detroit Lakes
Seitz, S. B.................Barnesville
Shaw, H. A................Lake Park
Simison, Carl............Barnesville
Thysell, F. A..............Moorhead
Thysell, V. D.................Hawley

DAKOTA COUNTY MEDICAL SOCIETY

Number of Members: 10

President
Emond, A. J............Farmington

Secretary
Peck, L. R.................Hastings

‡Burns, L. S............So. St. Paul
Emond, A. J............Farmington
Emond, J. S............Farmington
Field, A. H.............Farmington
‡Heinz, Ivy B...............Hastings
‡Heinz, L. H................Hastings
Peck, L. D..................Hastings
Peck, L. R..................Hastings
Sanford, J. A............Farmington
Walter, G. F.............Farmington

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties
Regular meetings, February, April, June, August, October, December
Annual meeting, December
Number of Members: 38

President
Swensen, R. G.........North Branch

Secretary
Roehlke, A. B.............Elk River

Arends, A. L.......Jamestown, N. D.
Albrecht, H. H........Taylors Falls
Blomberg, W. R..........Princeton
Bossert, C. S....................Mora
‡Brown, G. E...............Pine City
Brownstone, Manuel.......Sandstone
Bunker, B. W.....................Anoka
Callahan, F. F.......Ah-Gwah-Ching
Clothier, E. F.............Elk River
†Dedolph, T. H..........Minneapolis
Dredge, H. P..............Sandstone
Gray, R. C................Minneapolis
Gully, R. J................Cambridge
Halpin, J. E...............Rush City
Hedenstrom, L. H.........Cambridge
Holmes, A. E..............Rush City
Kelsey, C. G................Hinckley
Miller, E. W....................Anoka
Mork, A. H.....................Anoka
Mork, F. E.....................Anoka
Nordman, W. F..................Mora
Nygren, W. T.................Braham
O'Hanlon, J. A.............Lindstrom
‡Olson, L. M...........Chisago City
Patterson, H. D..................Anoka
Petersen, P. C..................Braham
Peterson, C. A.........Chisago City
Roehlke, A. B...............Elk River
‡Scherling, S. S.........Taylors Falls
Schlesselman, George..........Anoka
Sherman, H. T..............Cambridge
Spurzem, R. J....................Anoka
Stephan, E. L..................Hinckley
Stratte, A. K...................Pine City
Swensen, R. G.........North Branch
Tesch, G. H.................Elk River
Vik, Melvin......................Onamia
Whitney, R. A..............Cambridge

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 26

President
Donovan, D. L............Albert Lea

Secretary
Person, J. P.....................Alden

Barr, L. C.................Albert Lea
Branham, D. S...........Albert Lea
Butturff, C. R..............Freeborn
Calhoun, F. W...........Albert Lea
Demo, Robert A..........Albert Lea
Donovan, D. L............Albert Lea
Folken, F. G..............Albert Lea
Freeman, J. P.............Glenville
Freligh, W. P.............Albert Lea
Gamble, J. W.............Albert Lea
Gamble, P. M.............Albert Lea
Gullixson, A...............Albert Lea
Kassa, L. J................Albert Lea
Kamp, B. A................Albert Lea
Leopard, B. A.............Albert Lea
Neel, H. B..................Albert Lea
Nelson, Clayton E. J.....Albert Lea
‡Nesheim, M. O..............Emmons
Palmer, C. F...............Albert Lea
Palmer, W. L..............Albert Lea
‡Palmerton, E. S..........Albert Lea
Person, J. P......................Alden
Prins, L. R.................Albert Lea
Schultz, J. A...............Albert Lea
Swanson, R. R.............Albert Lea
Whitson, S. A..............Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Regular meetings, none
Annual meeting, December
Number of Members: 22

President
Graves, R. B..............Red Wing

Secretary
Brusegard, J. F...........Red Wing

Aanes, A. M...............Red Wing
Anderson, S. H............Red Wing
‡Baldigo, E. M............Red Wing
Brusegard, J. F...........Red Wing
Claydon, H. F.............Red Wing
Claydon, L. E.............Red Wing
Flom, M. G...............Zumbrota
Graves, R. B..............Red Wing
Hartnagel, G. F...........Red Wing
Hedin, R. F................Red Wing
Johnson, A. E.............Red Wing
Jones, A. W...............Red Wing
‡Juers, E. H...............Red Wing
Kimmel, G. C..............Red Wing
Larson, Ralph H.........Cannon Falls
Liffrig, W. W..............Red Wing
‡Mack, J. J............St. Louis, Mo.
McGuigan, H. T...........Red Wing
Sherman, R. V............Red Wing
Smith, M. W...............Red Wing
Steffens, L. A.............Red Wing
Williams, M. R.........Cannon Falls

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday each month, October through May
Annual meeting, October
Number of Members: 722

President
Campbell, O. J.........Minneapolis

Secretary
Jones, W. R.............Minneapolis

Executive Secretary
Mr. J. H. Baker........Minneapolis

Aagaard, G. N., Jr.......Minneapolis
Abramson, Milton........Minneapolis
Adkins, C. D.............Minneapolis
Alexander, H. A.........Minneapolis
Aling, C. A...............Minneapolis
Aling, C. P...............Minneapolis
Allen, H. W..............Minneapolis
*Allison, R. G............Minneapolis
Altnow, H. O.............Minneapolis
Andersen, A. G..........Minneapolis
Andersen, S. C..........Minneapolis
Anderson, D. D..........Minneapolis
Anderson, E. D..........Minneapolis
Anderson, E. R..........Minneapolis
Anderson, F. J...........Minneapolis
Anderson, J. K..........Minneapolis
Anderson, K. W.........Minneapolis
‡Anderson, U. S.........Minneapolis
Anderson, W. T.........Minneapolis
Andreassen, E. C.......Minneapolis
Andresen, K. D..........Minneapolis
Andrews, R. S...........Minneapolis
Arey, S. L................Minneapolis
Arlander, C. E...........Minneapolis
Arling, L. S..............Minneapolis
Arling, P. A................Rochester
Arnold, Ann W..........Minneapolis
Arnold, D. C.............Minneapolis
Arvidson, C. G..........Minneapolis
Aune, Martin............Minneapolis
Aurand, W. H...........Minneapolis
Baird, J. W..............Minneapolis
Baken, M. P.............Minneapolis
Baker, A. B..............Minneapolis
Baker, A. T..............Minneapolis
Baker, E. L..............Minneapolis
Baker, Looe.............Minneapolis
Balkin, S. G.............Minneapolis
‡Bank, H. E..............Minneapolis
†Barber, J. P.............Minneapolis
Barr, R. N....................St. Paul
Barron, Moses...........Minneapolis
Bateman, Olive A. L....Minneapolis
Baxter, S. H.............Minneapolis
Bayard, H. F.............Minneapolis
Beach, Northrop.........Minneapolis
†Beard, A. H.............Minneapolis
Beckman, W. G..................
San Francisco, Calif.
Bedford, E. W...........Minneapolis
†Bell, E. T................Minneapolis
Belzer, M. S.............Minneapolis
Benesh, L. A............Minneapolis
Benesh, N. G............Minneapolis
Benjamin, A. E..........Minneapolis
Benjamin, E. G..........Minneapolis
Benjamin, H. G..........Minneapolis
Benn, F. G...............Minneapolis
Berger, A. G.............Minneapolis
Bergh, G. S..............Minneapolis
Bergh, S. M..............Minneapolis
Berkwitz, N. J...........Minneapolis
Berman, Reuben.........Minneapolis
Bessesen, A. N., Jr......Minneapolis
Bessesen, D. H..........Minneapolis
Bessesen, W. A..........Minneapolis
Bieter, R. N..............Minneapolis
Blackmore, S. C.........Minneapolis
‡Blake, Alan..................Hopkins
Blake, James ....Hopkins
Blake, J. A....................Hopkins
‡Blake, P. S...................Hopkins
Bloedel, T. J....................Osseo
Blumenthal, J. S.........Minneapolis
‡Blumstein, Alex..........Minneapolis
Bockman, M. W. H......Minneapolis
Boehrer, J. J.............Minneapolis
Boies, L. R...............Minneapolis
Booth, A. E..............Minneapolis
Boreen, C. A.............Minneapolis
Borgeson, E. J...........Minneapolis
Borman, C. N............Minneapolis
Borowicz, L. A...........Minneapolis
Bourne, Jerome..........Minneapolis
Boynton, Ruth E.........Minneapolis
Bratrud, A. F............Minneapolis
Bratrud, T. E............Minneapolis
Brekke, H. J.............Minneapolis
Brill, Alice K............Minneapolis
Brooks, C. N.............Minneapolis
†Brown, E. D..............Paynesville
‡Brown, S. P.............Minneapolis
Brown, W. D.............Minneapolis
Brutsch, G. C............Minneapolis
‡Bryant, F. L.............Minneapolis
Buchstein, H. F..........Minneapolis
Bulkley, Kenneth........Minneapolis
Burlingame, D. A..............St. Paul
Buzzelle, L. K............Minneapolis
Cable, M. L..............Minneapolis
‡Cabot, C. M.............Minneapolis
Cabot, V. S..............Minneapolis
Cady, L. H...............Minneapolis
Callerstrom, G. W.......Minneapolis
Cameron, Isabell L......Minneapolis
Camp, W. E..............Minneapolis
Campbell, L. M..........Minneapolis
Campbell, O. J...........Minneapolis
Cardle, A. E..............Minneapolis
Carey, J. B...............Minneapolis
Carlson, Lawrence.......Minneapolis
Carlson, L. T.............Minneapolis
Caron, R. P..............Minneapolis
Caspers, C. G............Minneapolis
Cavanor, F. T............Minneapolis
Challman, S. A...........Minneapolis
Chesley, A. J.............Minneapolis
Christenson, G. R.......Minneapolis
Christianson, H. W......Minneapolis
†Clark, H. S..............Minneapolis
Clay, L. B.................Minneapolis
Cochrane, R. F..........Minneapolis
‡Cohen, B. A.............Minneapolis

Cohen, S. S.	Oak Terrace
‡Colp, E. A.	Robbinsdale
Condit, W. H.	Minneapolis
Corbett, J. F.	Minneapolis
Corniea, A. D.	Minneapolis
Coulter, E. B.	Minneapolis
Cowan, D. W.	Minneapolis
Cranmer, R. R.	Minneapolis
Cranston, R. W.	Minneapolis
Creevy, C. D.	Minneapolis
Creighton, R. H.	Minneapolis
Culligan, L. C.	Minneapolis
Cumming, H. A.	Minneapolis
*Curtin, J. F.	Minneapolis
Cutts, George	Minneapolis
Dady, E. E.	Minneapolis
Dahl, E. O.	Minneapolis
Dahl, J. A.	Minneapolis
Daniel, D. H.	Minneapolis
Davis, J. C.	Minneapolis
del Plaine, C. W.	Minneapolis
Dennis, Clarence	Minneapolis
Devereaux, T. J.	Wayzata
Diehl, H. S.	Minneapolis
Diessner, H. D.	Minneapolis
Dorge, R. I.	Minneapolis
Dornblaser, H. D.	Minneapolis
Dorsey, G. C.	Minneapolis
Dowidat, R. W.	Minneapolis
‡Downing, A. H.	Minneapolis
Doxey, G. L.	Minneapolis
Doyle, L. O.	Minneapolis
Drake, C. R.	Minneapolis
Drill, H. E.	Hopkins
Duff, E. R.	Minneapolis
Dukelow, D. A.	Minneapolis
†Dumas, A. G.	Minneapolis
Dunlap, E. H.	Minneapolis
Dunn, G. R.	Minneapolis
Dupont, J. A.	Excelsior
Duryea, W. M.	Minneapolis
†Dutton, C. E.	Minneapolis
Dvorak, B. A.	Minneapolis
Dwan, P. F.	Minneapolis
Dworsky, S. D.	Minneapolis
Dehrenberg, C. J.	Minneapolis
Dehrlich, S. P.	Minneapolis
Ederer, J. J.	Minneapolis
Eich, Matthew	Minneapolis
Eisenstadt, D. H.	Minneapolis
Eisenstadt, W. S.	Minneapolis
Eitel, G. D.	Minneapolis
Ellison, D. E.	Minneapolis
Engelhart, P. C.	Minneapolis
Engstrand, O. J.	Minneapolis
Erickson, R. F.	Minneapolis
Ericson, R. M.	Minneapolis
Evans, E. T.	Minneapolis
Evans, R. D.	Minneapolis
Fahr, G. E.	Minneapolis
Fansler, W. A.	Minneapolis
Farsht, I. J.	Minneapolis
‡Farkas, J. V.	Minneapolis
Feeney, J. M.	Minneapolis
Feinstein, J. Y.	Minneapolis
Fenger, E. P. K.	Oak Terrace
‡Fetterly, Warren	Minneapolis
‡Fink, D. L.	Minneapolis
Fink, L. W.	Minneapolis
Fink, W. H.	Minneapolis
†Fitzgerald, D. F.	Minneapolis
Fjelstad, C. A.	Minneapolis
Foker, L. W.	Minneapolis
Ford, W. H.	Minneapolis
Foster, W. K.	Minneapolis
Fowler, L. H.	Minneapolis
Frane, D. B.	Minneapolis
Frank, W. L., Jr.	Minneapolis
Frear, Rosemary R.	Minneapolis
Fredericks, G. M.	Minneapolis
Fredlund, M. L.	Minneapolis
Fried, L. A.	Minneapolis
Friedell, Aaron	Minneapolis
Friend, A. W.	Minneapolis
Frost, J. B.	Minneapolis
Fuller, Alice H.	Minneapolis
Funk, V. K.	Oak Terrace
Galligan, Margaret M. D.	Minneapolis
Galloway, J. B.	Minneapolis
Gammell, J. H.	Minneapolis
*Gardner, E. L.	Minneapolis
Garten J. L.	Minneapolis
Giere, J. C.	Minneapolis
Giere, R. W.	Minneapolis
†Giessler, P. W.	Minneapolis
Gilbert, Harry	Minneapolis
‡Gilbert, M. G.	Minneapolis
Gilles, F. L.	Minneapolis
Gingold, B. A.	Minneapolis
Girvin, R. B.	Minneapolis
‡Godwin, B. E.	Minneapolis
*Golberg, M. L.	Minneapolis
‡Goldberg, I. M.	Minneapolis
Goldman, T. I.	Minneapolis
Goldner, M. Z.	Minneapolis
Good, H. D.	Minneapolis
Gordon, P. E.	Minneapolis
Gratzek, F. R.	Minneapolis
Grave, Floyd	Minneapolis
Green, R. G.	Minneapolis
Grimes, Marian	Minneapolis
Gronvall, P. R.	Minneapolis
Gunderson, N. A.	Minneapolis
Gushurst, E. G.	Minneapolis
Gustason, H. T.	Minneapolis
‡Hagen, W. S.	Minneapolis
†Haggard, G. D.	Minneapolis
Hall, H. B.	Minneapolis
Hall, J. M.	Minneapolis
Hallberg, C. A.	Minneapolis
Hamel, A. L.	Minneapolis
Hamlin, G. B.	Minneapolis
Hammerstad, L. M.	Minneapolis
Hammond, A. J.	Minneapolis
Hannah, H. B.	Minneapolis
Hansen, C. O.	Minneapolis
Hansen, E. W.	Minneapolis
Hansen, Olga S.	Minneapolis
Hanson, H. J.	Minneapolis
Hanson, H. V.	Minneapolis
Hanson, M. B.	Minneapolis
Hanson, W. A.	Minneapolis
Happe L. J.	Minneapolis
Harrington, C. D.	Wayzata
Harrington, F. E.	Minneapolis
Hart, V. L.	Minneapolis
Hartig, Hermina	Minneapolis
†Hartzell, T. B.	Minneapolis
Hastings, D. R.	Minneapolis
Hauge, E. T.	Minneapolis
Haugen, J. A.	Minneapolis
Haven, W. K.	Minneapolis
Hawkinson, R. P.	Minneapolis
Hayes, J. M.	Minneapolis
‡Hays, A. T.	Minneapolis
Head, D. P.	Minneapolis
Head, G. D.	Minneapolis
Hedback, A. E.	Minneapolis
Heim, R. R.	Minneapolis
Hendrickson, J. F.	Minneapolis
Henrikson, E. C.	Minneapolis
†Henry, C. E.	Kirksville, Mo.
Henry, M. O.	Minneapolis
Herbert, W. L.	Minneapolis
Hertzog, A. J.	Minneapolis
Hesdorffer, M. B.	Minneapolis
Higgins, J. H.	Minneapolis
†Hill, Eleanor J.	Minneapolis
Hillis, S. J.	Minneapolis
Hinckley, R. G.	Minneapolis
Hirshfield, F. R.	Minneapolis
‡Hitchcock, C. R.	Minneapolis
†Hoaglund, A. W.	Los Angeles, Calif.
*Hobbs, C. A.	Minneapolis
Hodge, S. V.	Minneapolis
Hoffbauer, F. W.	Minneapolis
Hoffert, H. E.	Minneapolis
Hoffman, R. A.	Minneapolis
Hoffman, W. L.	Minneapolis
†Holl, P. M.	Minneapolis
Holmberg, C. J.	Minneapolis
Holzafel, F. C.	Minneapolis
Horns, R. C.	Minneapolis
Houkom, Bjarne	Minneapolis
Hovland, M. L.	Minneapolis
Howard, S. E.	Minneapolis
Hudson, G. E.	Minneapolis
Huenekens, E. J.	Minneapolis
Hultkrans, J. C.	Minneapolis
Hultkrans, R. E.	Minneapolis
Hurd, Annah	Minneapolis
‡Hutchinson, C. J.	Minneapolis
Hutchinson, D. W.	Oak Terrace
Hymes, Charles	Minneapolis
Hynes, J. E.	Minneapolis
Irvine, H. G.	Minneapolis
Iverson, R. M.	Minneapolis
†Jackson, C. M.	Minneapolis
Jaeck, J. L.	Minneapolis
‡James, E. M.	Minneapolis
Jensen, Harry	Minneapolis
Jensen, M. J.	Minneapolis
Jensen, R. A.	Minneapolis
Johnson, A. B.	Minneapolis
Johnson, A. E.	Minneapolis
Johnson, E. V.	St. Louis Park
Johnson, E. W.	Minneapolis
Johnson, H. A.	Minneapolis
Johnson, J. A.	Minneapolis
Johnson, J. W.	Minneapolis
Johnson, Julius	Minneapolis
Johnson, M. R.	Minneapolis
†Johnson, N. A.	Santa Monica, Calif.
Johnson, Norman	Minneapolis
Johnson, N. T.	Minneapolis
‡Johnson, R. A.	Minneapolis
‡Johnson, Raymond A.	Minneapolis
Johnson, R. E.	Minneapolis
Johnson, Y. T.	Minneapolis
Jones, H. W., Jr.	Minneapolis
Jones, W. R.	Minneapolis
Josewich, Alexander	Minneapolis
Judd, W. H.	Washington, D. C.
Jurdy, M. J.	Minneapolis
Kabler, P. W.	Minneapolis
Kalin, O. T.	Minneapolis
Karlstrom, A. E.	Minneapolis
Kaufman, H. J.	Minneapolis
Kelby, G. M.	Minneapolis
Kennedy, C. C.	Minneapolis
Kennedy, Jane F.	Minneapolis
Kerkhof, A. C.	Minneapolis
Kertesz, G.	Minneapolis
†King, E. A.	Minneapolis
King, F. W.	Oak Terrace
Kinsella, T. J.	Minneapolis
Kistler, A. J.	Minneapolis
†Kistler, C. M.	Minneapolis
Knapp, M. E.	Minneapolis
Knight, R. R.	Minneapolis
Knight, R. T.	Minneapolis
Koepcke, G. M.	Minneapolis
Koller, H. M.	Minneapolis
Koller, L. R.	Minneapolis
Korchik, J. P.	Minneapolis
Koucky, R. W.	Minneapolis
Kucera, F. J.	Hopkins
Kucera, W. J.	Minneapolis
‡Lagaard, S. M.	Minneapolis
Lajoie, J. M.	Minneapolis
Lang, L. A.	Minneapolis
Lapierre, A. P.	Minneapolis
Lapierre, J. T.	Minneapolis
Larsen, F. W.	Minneapolis
Larson, C. M.	Minneapolis
Larson, Lawrence M.	Minneapolis
Larson, L. M.	Oak Terrace
Larson, P. N.	Minneapolis
La Vake, R. T.	Minneapolis
Laymon, C. W.	Minneapolis
Lazar, H. L.	Pasadena, Calif.
†Leavitt, H. H.	Minneapolis
Lebowske, J. A.	Minneapolis
Lee, H. M.	Minneapolis
Leland, J. A. C.	Minneapolis
Lenz, O. A.	Minneapolis
Leonard, L. J.	Minneapolis
Leonard, Sam	Minneapolis
Lillehei, E. J.	Robbinsdale
‡Lind, C. J., Jr.	Minneapolis
Lind, C. J.	Minneapolis
Lindberg, A. C.	Minneapolis
Lindberg, V. L.	Minneapolis
Lindgren, R. C.	Minneapolis
Lindquist, R. H.	Minneapolis
Linner, H. P.	Minneapolis
Lippman, E. S.	Minneapolis
Lipschultz, Oscar	Minneapolis
Litchfield, J. T.	Minneapolis
Litman, A. B.	Minneapolis
Litzenberg, J. C.	Minneapolis
Lofsness, S. V.	Minneapolis
Logefeil, R. C.	Minneapolis
*Long, Jesse	Minneapolis
Loomis, E. A.	Minneapolis
Lovett, Beatrice R.	Oak Terrace
Lowry, Elizabeth C.	Minneapolis
Lowry, Thomas	Minneapolis
Lufkin, N. H.	Minneapolis
Lund, C. J.	Minneapolis
Lundberg, Ruth I.	Minneapolis
Lundblad, R. A.	Minneapolis
Lundblad, S. W.	Minneapolis
Lundgren, A. C.	Minneapolis
Lundquist, E. F.	Minneapolis
Lynch, M. J.	Minneapolis
Lysne, Henry	Minneapolis
Lysne, Myron	Minneapolis
MacDonald, A. E.	Minneapolis
MacDonald, D. A.	Minneapolis
Mach, F. B.	Minneapolis
MacKinnon, D. C.	Minneapolis
MacMillan, D. G.	Minneapolis
Macnie, J. S.	Minneapolis
Maeder, E. C.	Minneapolis
Maland, C. O.	Minneapolis
Mariette, E. S.	Oak Terrace
Mark, D. B.	Minneapolis
Marking, G. H.	Minneapolis
Martinson, C. J.	Wayzata
‡Martinson, E. J.	Wayzata
†Matchan, G. R.	Minneapolis
Matthews, Justus	Minneapolis
Mattill, P. M.	Oak Terrace
Mattison, R. E.	Billings, Mont.
Mattson, Hamlin	Minneapolis
Maxeiner, S. R.	Minneapolis
‡McCaffrey, F. J.	Minneapolis
McCarthy, Donald	Minneapolis
McCartney, J. S.	Minneapolis
‡McCrimmon, H. P.	Minneapolis
McDaniel, Orianna	Minneapolis
McFarland, A. H.	Minneapolis
McGandy, R. F.	Minneapolis
McGeary, G. E.	Minneapolis
McInerny, M. W.	Minneapolis
McKelvey, J. L.	Minneapolis

McKenzie, C. H..........Minneapolis
McKinlay, C. A..........Minneapolis
McKinley, J. C..........Minneapolis
McKinney, F. S..........Minneapolis
McMurtrie, W. B..........Minneapolis
McPheeters, H. O..........Minneapolis
†McQuarrie, Irvine..........Minneapolis
Meller, R. L..........Minneapolis
Merkert, C. E..........Minneapolis
Merkert, G. L..........Minneapolis
†Merrick, Charlotte T..........Minneapolis
†Merrill, Elizabeth..........Minneapolis
Meyer, A. J..........Minneapolis
Meyer, E. L..........Minneapolis
Michael, J. C..........Minneapolis
Michel, H. H..........Minneapolis
Michelson, H. E..........Minneapolis
‡Miller, Harold E..........Minneapolis
Miller, Hugo E..........Minneapolis
Miller, J. C..........Minneapolis
Milton, J. S..........Minneapolis
‡Minsky, A. A..........Minneapolis
Mitchell, B. D..........Minneapolis
Mitchell, E. C..........Mound
Mitchell, M. E..........Minneapolis
Moe, J. H..........Minneapolis
Moen, J. K..........Minneapolis
Monahan, Elizabeth S..........Minneapolis
Monson, E. M..........Minneapolis
Moren, Edward..........Minneapolis
Morrison, A. W..........Minneapolis
Morrison, Charlotte J..........Minneapolis
Morse, R. W..........Minneapolis
Murphy, E. P..........Minneapolis
Murphy, I. J..........Minneapolis
Musty, N. J..........Minneapolis
Myers, J. A..........Minneapolis
Naslund, A. W..........Minneapolis
Neal, J. M..........Minneapolis
Neary, R. P..........Minneapolis
Nelson, Bernice A...Big Fork, Mont.
Nelson, Bernette G..........Minneapolis
†Nelson, H. S.....Los Angeles, Calif.
Nelson, E. N..........Minneapolis
Nelson, N. Harvey..........Minneapolis
Nelson, M. C..........Minneapolis
Nelson, O. L. N..........Minneapolis
‡Nelson, W. I..........Minneapolis
Nesset, L. B..........Marshall
*Newhart, Horace..........Minneapolis
Noonan, W. J..........Minneapolis
Nord, Robert E..........Minneapolis
Noran, Harold H..........Minneapolis
Nordin, G. T..........Minneapolis
Nordland, Martin..........Minneapolis
Noth, H. W..........Minneapolis
Nydahl, M. J..........Minneapolis
Nylander, E. G..........Minneapolis
Nystrom, Ruth G..........Minneapolis
Oberg, C. M..........Minneapolis
†O'Brien, W. A..........Minneapolis
O'Donnell, J. E..........Minneapolis
‡Olsen, E. G..........Minneapolis
Olson, A. C..........Minneapolis
Olson, O. A..........Minneapolis
†Olson, R. G..........Minneapolis
Oppen, E. G..........Minneapolis
†Owre, Oscar..........Minneapolis
Paine, J. R..........Minneapolis
Palen, B. J..........Minneapolis
Patterson, W. E..........Minneapolis
Peppard, T. A..........Minneapolis
Perlman, E. C..........Minneapolis
‡Petersen, G. L..........Minneapolis
Petersen, J. R..........Minneapolis
Petersen, R. T..........Minneapolis
Peterson, Henry..........Minneapolis
‡Peterson, H. W..........Minneapolis
Peterson, N. P..........Minneapolis
Peterson, O. H..........Minneapolis
Peterson, P. E..........Minneapolis
Peterson, W. C..........Minneapolis
‡Petit, J. V..........Minneapolis
Petit, L. J..........Minneapolis
Pewters, J. T..........Minneapolis
Peyton, W. T..........Minneapolis
Pfunder, M. C..........Minneapolis
Phelps, K. A..........Minneapolis
Platou, E. S..........Minneapolis
Plimpton, N. C..........Minneapolis
Pohl, J. F..........Minneapolis
Pollard, D. W..........Minneapolis
Pollock, D. K..........Minneapolis
Polzak, J. A..........Minneapolis
Poppe, F. H..........Minneapolis
Potter, R.B..........Minneapolis
Pratt, F. J..........Minneapolis
Preine, I. A..........Minneapolis
Preston, P. J..........Minneapolis
Priest, R. E..........Minneapolis
Prim, J. A..........Minneapolis
Proffitt, W. E..........Minneapolis
Quello, R. O. B..........Minneapolis
†Quinby, T. F..........Minneapolis
Quist, H. W..........Minneapolis
‡Quist, H. W., Jr..........Minneapolis
Regnier, E. A..........Minneapolis
Reid, L. M..........Excelsior
Reif, H. A..........Minneapolis
‡Rewbridge, A. G..........Minneapolis
Reynolds, J. S..........Minneapolis
Rice, C. O..........Minneapolis
‡Richardson, F. S..........Minneapolis
Richdorf, L. F..........Minneapolis
Rieke, W. W..........Wayzata
Rigler, L. G..........Minneapolis
Riordan, Elsie M..........Minneapolis
Risch, R. E..........Minneapolis
Rizer, D. K..........Minneapolis
Rizer, R. I..........Minneapolis
Roan, C. M..........Minneapolis
Roan, O. M..........Minneapolis
Robb, E. F..........Minneapolis
Robbins, O. F..........Minneapolis
Roberts, L. J..........Minneapolis
Roberts, S. W..........Minneapolis
*Roberts, T. S..........Minneapolis
Roberts, W. B..........Minneapolis
Robitshek, E. C..........Minneapolis
*Rochford, W. E..........Minneapolis
Rodda, F. C..........Minneapolis
Rosendahl, F. H..........St. Paul
Rosenwald, R. M..........Minneapolis
Roskilly, G. C. P..........Minneapolis
Ross, A. J..........Minneapolis
Rucker, W. H..........Minneapolis
Rud, N. E..........Minneapolis
Rudell, G. L..........Minneapolis
Russeth, A. N..........Minneapolis
Rusten, E. M..........Minneapolis
Ryding, V. T..........Howard Lake
Sadler, W. P..........Minneapolis
‡St. Cyr, K. J..........Osseo
Saliterman, B. I..........Minneapolis
Salt, C. G..........Minneapolis
Samuelson, Samuel..........Minneapolis
Sandt, K. E..........Minneapolis
Sarff, O. E..........Minneapolis
Sawatzky, W. A..........Minneapolis
Schaaf, F. H. K..........Minneapolis
Schaefer, W. G..........Minneapolis
†Scheldrup, N. H..........Minneapolis
Scherer, L. R..........Minneapolis
Schiele, B. C..........Minneapolis
Schmidt, G. F..........Minneapolis
†Schmitt, A. F..........Minneapolis
†Schmitt, S. C.....Los Angeles, Calif.
†Schneider, J. P..........Minneapolis
Schneidman, N. R..........Minneapolis
Schottler, M. E..........Minneapolis
Schultz, H. J..........Minneapolis
‡Schultz, P. J..........Minneapolis
†Schussler, O. F..........Minneapolis
Schwartz, V. J..........Minneapolis
†Schwyzer, Gustav..........Minneapolis
†Scott, F. H..........Minneapolis
Scott, H. G..........Minneapolis
†Seashore, Gilbert..........Minneapolis
Seham, Max..........Minneapolis
Seifert, M. H..........Excelsior
‡Seljeskog, S. R..........Minneapolis
*Sessions, J. C..........Minneapolis
Shandorf, J. F..........Minneapolis
Shaperman, Eva P..........Minneapolis
Shapiro, M. J..........Minneapolis
Sharp, D. V..........Minneapolis
Siegmann, W. C..........Minneapolis
Silver, J. D..........Minneapolis
Simons, J. H..........Minneapolis
Simonson, D. B..........Minneapolis
Simpson, E. D..........Minneapolis
Sinykin, M. B..........Minneapolis
Siperstein, D. M..........Minneapolis
†Sivertsen, Andrew..........Nisswa
Sivertsen, Ivar..........Minneapolis
Skjold, A. C..........Minneapolis
‡Sloan, Julius..........Minneapolis
‡Smisek, F. M..........Minneapolis
Smith, Adam M..........Minneapolis
Smith, Archie M..........Minneapolis
Smith, H. R..........Minneapolis
Smith, Margaret I..........Minneapolis
Smith, N. M..........Minneapolis
Smith, N. R..........Minneapolis
Soderlind, R. T..........Minneapolis
Solhaug, S. B..........Minneapolis
Spano, J. P..........Minneapolis
Spink, W. W..........Minneapolis
Spratt, C. N..........Minneapolis
Stahr, A. C..........Hopkins
Stanford, C. E..........Minneapolis
Stebbins, T. L..........Minneapolis
Stein, K. E..........Lakeville
Stelter, L. A..........Minneapolis
Stenstrom, Annette T..........Minneapolis
Stewart, R. I..........Minneapolis
Stoesser, A. V..........Minneapolis
†Stomel, Joseph....Los Angeles, Calif.
†Strachauer, A. C..........Minneapolis
Stromgren, D. T..........Minneapolis
Stone, S. P..........Minneapolis
Strout, G. E..........Minneapolis
Sturre, J. R..........Minneapolis
Stuurmans, S. H..........Minneapolis
Sullivan, R. M..........Minneapolis
Sundt, Mathias..........Minneapolis
Swanson, R. E..........Minneapolis
Sweetser, H. B., Jr..........Minneapolis
†Sweetser, H. B., Sr..........Minneapolis
Sweetser, T. H..........Minneapolis
Sweitzer, S. E..........Minneapolis
†Swendseen, C. G..........Minneapolis

Tangen, G. M..........Minneapolis
Taylor, J. H..........Minneapolis
Tenner, R. J..........Minneapolis
Thomas, G. E..........Minneapolis
Thomas, G. H..........Minneapolis
Thompson, W. H..........Minneapolis
Thysell, D. M..........Minneapolis
Tingdale, A. C..........Minneapolis
Todd, Romona L..........Minneapolis
Trach, Benedict..........Minneapolis
Trow, J. E..........Minneapolis
‡Trow, W. H..........Minneapolis
Troxil, Elizabeth B..........Minneapolis
Trueman, H. S..........Minneapolis
Tudor, R. B..........Minneapolis
Tunstead, H. J..........Minneapolis
Turnacliff, D. D..........Minneapolis

Ude, W. H..........Minneapolis
Ulrich, H. L..........Minneapolis
Undine, C. A..........Minneapolis

‡Van Cleve, H. P..........Minneapolis
Vik, A. E..........Minneapolis

Wahlquist, H. F..........Minneapolis
Walch, A. E..........Minneapolis
Waldron, C. W..........Minneapolis
Wall, C. R..........Minneapolis
Walsh, W. T..........Minneapolis
Wangensteen, O. H..........Minneapolis
Ward, P. A..........Minneapolis
Watson, C. G..........Minneapolis
Watson, C. J..........Minneapolis
Weaver, M. M..........Minneapolis
Webb, E. A..........Minneapolis
Webb, R. C..........Minneapolis
‡Westphal, K. F..........Minneapolis
Wethall, A. G..........Minneapolis
Wetherby, Macnider..........Minneapolis
Weum, T. W..........Minneapolis
White, A. A..........Minneapolis
White, S. M..........Minneapolis
White, W. D..........Minneapolis
Whitesell, L. A..........Minneapolis
Widen, W. F..........Minneapolis
Wilcox, A. E..........Minneapolis
†Willcutt, C. E..........Phoenix, Ariz.
‡Wildebush, F. F..........Minneapolis
Wilder, K. W..........Minneapolis
Wilder, R. L..........Minneapolis
Wilken, P. A..........Minneapolis
†Williams, Robert..........Carthage, Ill.
Winther, Nora M. C..........Minneapolis
‡Wipperman, F. F..........Minneapolis
Witham, C. A..........Minneapolis
Wittich, F. W..........Minneapolis
Wolf, W. W..........Minneapolis
Wohlrabe, A. A..........Minneapolis
†Wright, C. D..........Minneapolis
Wright, S. G..........Minneapolis
Wright, W. S..........Minneapolis
Wyatt, O. S..........Minneapolis
Wynne, H. M. N..........Minneapolis

Ylvisaker, R. S..........Minneapolis
Yoerg, O. W..........Minneapolis
Zierold, A. A..........Minneapolis
Zinter, F. A..........Minneapolis
Ziskin, Thomas..........Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
Annual meeting, November
Number of Members, 36

President
Telford, V. J..........Litchfield

Secretary
Wilmot, H. E..........Litchfield

Anderson, R. E..........Willmar
Arnson, J. M..........Benson

‡Beckjord, P. R..............Willmar
Branton, A. F.......Nashville, Tenn.
Branton, B. J...............Willmar
Brigham, Frank.............Watkins

Daignault, Oscar.............Benson
Danielson, K. A............Litchfield
Danielson, Lennox.........Litchfield
Dowswell, W. J...........Kerkhoven

Fisher, J. M................Willmar
Frederickson, Alice C........Willmar
Frederickson, G. U. Y.......Willmar

Frisch, F. P................Willmar
Frost, E. H.................Willmar

Giere, S. W.................Benson
Gilman, L. C................Willmar

Hodapp, R. J................Willmar

Jacobs, D. L................Willmar
Jacobs, J. C................Willmar
Johnson, Hans............Kerkhoven
Kaufman, E. J.............Appleton
Lindley, S. B...............Willmar
Macklin, W. E.............Litchfield

Mattson, A. D..........Minneapolis
O'Connor, D. C.........Eden Valley
Penhall, F. W...............Willmar
Porter, O. M................Willmar
Proeschel, R. K.............Willmar
Ripple, R. J...........New London
Scofield, C. L................Benson
Sellers, G. K.................Dassel
Solsem, F. N.........Ah-Gwah-Ching
Telford, V. J...............Litchfield
Wilmot, C. A...............Litchfield
Wilmot, H. E...............Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
Annual meeting, last Tuesday in October
Number of Members: 28

President
Sanderson, E. T.............Marshall

Secretary
Workman, W. G...............Tracy

Akester, Ward...........Fergus Falls
Ferguson, W. C.......Walnut Grove
Ford, B. C.................Marshall
‡Frank, J. E................Marshall
Friedell, George.............Ivanhoe
Germo, Charles..............Balaton

Gray, F. D.................Marshall
Gray, R. F.................Marshall
‡Helferty, J. K.................Tracy
Hermanson, P. E..........Hendricks
Hoidale, A. D.................Tracy
Johnson, P. C.................Tyler
‡Karleen, C. J.................Tracy
Kruezer, T. C..............Marshall
‡Monson, L. J.................Canby
‡Murphy, J. E..............Marshall
Patterson, R. B...........Marshall

Purves, G. H.............Hendricks
†Robertson, J. B.........Minneapolis
†Sanderson, E. T...........Marshall
Sether, A. F................Ruthton
Smith, L. A.................Balaton
Thompson, C. O..........Hendricks
Vadheim, A. L.................Tyler
Valentine, W. H...............Tracy
‡Wolstan, S. D............Minneota
Workman, W. G...............Tracy
Yaeger, W. W..............Marshall

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, second or third Wednesday of month
Annual meeting, January
Number of Members: 20

President
Sheppard, C. G...........Hutchinson

Secretary
Truesdale, C. W.............Glencoe

Brink, D. M..............Hutchinson
Clement, J. B.........Lester Prairie
Goss, H. C..................Glencoe

Goss, Martha D.............Glencoe
Holm, H. H.................Glencoe
Jensen, A. M...............Brownton
‡Kallestad, L. L...........Hutchinson
Klima, W. W................Stewart
Lippmann, E. W.........Hutchinson
McMahon, M. J...........Green Isle
Neumaier, Arthur............Glencoe

Peterson, K. H..........Hutchinson
Rempel, D. D.........Lester Prairie
Sahr, W. G..............Hutchinson
Scholpp, O. W...........Hutchinson
Selmo, J. D.................Norwood
Sheppard, C. G..........Hutchinson
*Sheppard, P. E..........Hutchinson
Truesdale, C. W............Glencoe
Trutna, T. J.............Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday of each month
Annual meeting, December
Number of Members: 27

President
Anderson, D. P., Jr..........Austin

Secretary
Robertson, P. A..............Austin

Allen, C. C..................Austin
Allen, H. B..................Austin
Anderson, D. P., Jr..........Austin
Cronwell, B. J...............Austin
‡Eckdale, J. E..................Lyle

‡Eckhardt, C. L..............Austin
Fisch, H. M..................Austin
Flanagan, L. G...............Austin
Grise, W. B..................Austin
Havens, J. G. W..............Austin
Hegge, O. H..................Austin
Hegge, R. S..................Austin
Henslin, A. E...............Le Roy
Henslin M. E................Le Roy
Hertel, G. E.................Austin
‡Leck, P. C...................Austin

Lommen, P. A...............Austin
McKenna, J. K...............Austin
Melzer, G. R....................Lyle
Morse, M. P.................Le Roy
Robertson, P. A.............Austin
Rosenthal, F. H.......Grand Meadow
Schneider, P. J..............Adams
Schottler, G. J...............Dexter
Sheedy, C. L.................Austin
Thomson, J. M.........Chicago, Ill.
Wilson, F. C..................Austin

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, every four months
Annual meeting, December
Number of Members: 25

President
Strathern, C. S.............St. Peter

Secretary
Olmanson, E. G............St. Peter

Covell, W. W...............St. Peter
Curtis, R. A...............LeCenter
Ericson, Swan..............LeSueur
Freeman, G. H.............St. Peter
Giroux, A. A.........North Mankato

Grimes, B. P...............St. Peter
Hiniker, P. J...............LeSueur
Holtan, Theodore..........Waterville
Johnson, H. C.......North Mankato
Kolars, J. J.................Faribault
Langhoff, A. H............St. Peter
Larson, M. H...............Nicollet
Lenander, M. E............St. Peter
Nilson, H. J.........North Mankato
Nissen, A. S...............St. Peter

Olmanson, E. G...........St. Peter
Olson, D. C.................Gaylord
‡Rossen, R. X...............Hastings
Sonnesyn, N. N............Le Sueur
Stostrom, L. E.............St. Peter
Strathern, C. S............St. Peter
Strathern, F. P.............St. Peter
Traxler, J. F..............Henderson
Wohlrabe, C. F.......North Mankato
Wolner, O. H..............St. Peter

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting, November
Number of Members: 701

President
Anderson, M. J............Rochester

Secretary
Carryer, H. M.............Rochester

Abbott, K. H..............Rochester
Adams, R. C...............Rochester
Adson, A. W...............Rochester
Affeldt, D. E.................Kasson
Ahlfs, J. J................Caledonia
‡Aita, J. A..................Rochester
‡Albers, G. D..............Rochester
Aldrich, C. A..............Rochester
Allen, E. V................Rochester
Alvarez, W. C.............Rochester
Amberg, Samuel..........Rochester
Ambrusko, J. S............Rochester
Anderson, C. D............Rochester
*Anderson, E. M...........Rochester
Anderson, M. J............Rochester

Anderson, M. W..........Rochester
‡Anderson, N. E............Harmony
Ashburn, F. S.............Rochester
Ashley, W. F..............Rochester
Askren, E. L., Jr..........Rochester
‡Atwater, J. S.............Rochester

Babb, F. S................Rochester
Bacon, J. F...............Rochester
Baggenstoss, A. H........Rochester
Bair, H. L.................Rochester
Baker, G. S...............Rochester
Baker, H. R................Hayfield
Baker, R. L................Hayfield
Balfour, D. C.............Rochester
‡Balfour, D. C., Jr.........Rochester
Balfour, W. M............Rochester
‡Banner, E. A.............Rochester
Bargen, J. A..............Rochester
Barker, N. W..............Rochester
Barnes, A. R..............Rochester

‡Barr, M. M...............Rochester
Bayrd, E. D...............Rochester
‡Beard, Crowell............Rochester
Beare, J. B...............Rochester
Bearzy, H. J..............Rochester
‡Beizer, L. H..............Rochester
Belote, G. B..............Caledonia
Benedict, W. L...........Rochester
‡Bennett, J. G.............Rochester
‡Bennett, J. K.............Rochester
‡Bennett, W. A............Rochester
Benson, A. J..............Rochester
Berkman, D. M...........Rochester
Berkman, D. S............Rochester
Berkman, J. M............Rochester
Bickel, W. H..............Rochester
Bigelow, C. E........Dodge Center
Binger, M. W....Chattanooga, Tenn.
Black, A. S., Jr...........Rochester
Black, B. M...............Rochester
‡Black, W. A..............Rochester

‡Blaisdell, J. S.............Rochester
Boothby, W. M.............Rochester
Bowing, H. H.............Rochester
Braasch, W. F.............Rochester
Bradley, W. F.............Rochester
‡Bradshaw, S. P.............Rochester
Brandes, R. W.............Rochester
‡Breslow, Lester.............Rochester
Briggs, N. M.............Rochester
‡Brindley, G. V.............Rochester
Broders, A. C.............Rochester
‡Brooksby, W. A.............Rochester
Brown, A. E.............Rochester
Brown, H. A.............Rochester
‡Brown, J. R.............Rochester
‡Brown, M. H.............Rochester
Brown, P. W.............Rochester
‡Browne, H. C., Jr.............Rochester
‡Browning, W. H.............Rochester
Brunsting, L. A.............Rochester
Bryan, A. L.............Rochester
‡Bryson, J. C.............Rochester
‡Buck, R. M.............Rochester
Buie, L. A.............Rochester
Burchell, H. B.............Rochester
‡Burkhart, R. J.............Rochester
Bush, R. P.............Rochester
Butt, H. R.............Rochester

Caldwell, H. W.............Rochester
‡Call, J. D.............Rochester
Calmenson, Marvin.............Rochester
‡Cameron, J. M.............Rochester
Camp, J. D.............Rochester
‡Campbell, C. M.............Rochester
‡Campbell, D. C.............Rochester
Campbell, J. R.............Rochester
Canfield, W. W.............Houston
‡Carmona, M. G.............Rochester
Carpenter, R. E.............Rochester
Carr, D. T.............Rochester
Carryer, H. M.............Rochester
Catinella, P. J.............Rochester
Ceder, E. T.............Rochester
‡Chapman, A. S.....Oyster Bay, N. Y.
‡Chapman, J. P., Jr.............Rochester
Chesley, G. L.............Rochester
Christensen, N. A.............Rochester
Ciaramelli, Letizia C.............Rochester
Clagett, O. T.............Rochester
Clark, F. H.............Rochester
Clark, L. W.............Spring Valley
‡Clarkson, W. R.............Rochester
‡Cleveland, W. H.............Rochester
Clifton, T. A.............Chatfield
‡Cluxton, H. E., Jr.............Rochester
Comfort, M. W.............Rochester
‡Condon, W. B.............Rochester
Conley, F. W.............Rochester
†Connor, H. M.............Rochester
Connolly, C. J.............Rochester
Cook, E. N.............Rochester
Cooper, Talbert.............Rochester
‡Cooper, W. L.............Rochester
‡Copsey, H. G.............Rochester
‡Corbitt, R. W.............Rochester
Correa, D. H.............Rochester
Costin, M. E., Jr.............Rochester
Counseller, V. S.............Rochester
Coventry, M. B.............Rochester
Cox, W. B.............Rochester
Cox, W. F.............Rochester
‡Cragg, R. W.............Rochester
Craig, W. McK.............Rochester
Crewe, J. E.............Rochester
Cronkite, A. E.............Rochester
Crowley, D. F., Jr.............Rochester
‡Cummings, D. W.................
Oklahoma City, Okla.
Cunningham, B. P.............Rochester
‡Cusick, P. L.............Rochester
‡Custer, M. D.............Rochester

Dafoe, W. A.............Rochester
‡Dahleen, H. C.............Rochester
Darling, J. P.............Rochester
‡Daugherty, G. W.............Rochester
Daut, R. V.............Rochester
‡Davies, L. T.............Rochester
Davis, A. C.............Rochester
Davis, I. G.............Rushford
Davis, R. M.............Rochester
Day, Lois A.............Rochester
Dearing, W. H., Jr.............Rochester
DeForest, R. E.............Rochester
Demong, C. V.............Rochester
Desjardins, A. U.............Rochester
Deterling, R. A.............Rochester
DeVoe, R. W.............Rochester
Dickson, J. A., Jr.............Rochester
Dille, R. S.............Rochester
Dixon, C. F.............Rochester
Dobyns, B. M.............Rochester
Dockerty, M. B.............Rochester
‡Doehring, P. C.............Rochester
Dolder, F. C.............Eyota

‡Donoghue, F. E.............Rochester
‡Douglass, B. E.............Rochester
†Drake, F. A.............Lanesboro
‡Drapiewski, J. F.............Rochester
Drips, Della G.............Rochester
‡Drumheller, J. F.............Rochester
Dry, T. J.............Rochester
‡DuMais, A. F.............Rochester
‡Dunlap, D. L.............Rochester
Dunn, J. H.............Rochester
Eaton, L. M.............Rochester
Egan, Sherman,.............Rochester
‡Ehni, George.............Rochester
Elkins, E. C.............Rochester
‡Ellingson, E. A.............Rochester
Ellis, F. H.............Rochester
‡Ellison, A. B. C.............Rochester
Emerson, G. F.............Rochester
Emmett, J. L.............Rochester
‡Engstrom, W. W.............Rochester
Erich, J. B.............Rochester
‡Erickson, C. O.............Rochester
‡Erickson, D. J.............Rochester
Estes, J. E.............Rochester
Eusterman, G. B.............Rochester
†Evarts, A. B.............Rochester
Evert, J. A., Jr.............Rochester

Faber, J. E.............Rochester
Faber, W. M.............Rochester
‡Fahlund, G. T. R.............Rochester
Fair, E. E.............Rochester
Farber, E. M.............Rochester
‡Fawcett, R. M.............Rochester
Feldman, F. M.............Rochester
‡Ferguson, F. F.............Rochester
‡Ferguson, Wm. J.............Rochester
‡Ferguson, W. J.............Rochester
Ferris, D. O.............Rochester
Ferris, H. A., Jr.............Rochester
Figi, F. A.............Rochester
Fischer, Albert.............Rochester
Fisher, R. L.............Rochester
Fitzgibbons, R. J.............Rochester
Flasher, Jack.............Rochester
Flashman, F. L.............Rochester
Flickinger, F. M.............Rochester
Flinn, J. H.............Rochester
‡Foerster, J. M.............Rochester
‡Fogarty, C. W., Jr.............Rochester
Forney, R. A.............Rochester
Foss, E. L.............Rochester
‡Foster, M. A.............Rochester
‡Freeman, J. G.............Rochester
Fricke, R. E.............Rochester
‡Friedell, M. T.............Rochester

Gaarde, F. W.............Rochester
‡Gaarde, F. W., Jr.............Rochester
Gambill, E. E.............Rochester
Gastineau, C. F.............Rochester
Gentry, R. W.............Rochester
Ghormley, R. K.............Rochester
Gibson, R. H.............Rochester
‡Giffin, H. M.............Rochester
Giffin, H. Z.............Rochester
Giffin, Mary E.............Rochester
Gilbertson, Eva L.............Rochester
Gilliland, Martha J.............Rochester
‡Glomset, D. A.............Rochester
Glover, R. P.............Rochester
‡Golden, P. B.............Rochester
Golden, R. F.............Rochester
Good, C. A., Jr.............Rochester
Gordon, N. F.............Rochester
‡Gorsuch, M. T.............Rochester
Graham, F. M.............Rochester
Graham, R. J.............Rochester
Graham, R. B.............Rochester
Gray, H. K.............Rochester
‡Green, W. S.............Rochester
Greene, L. F.............Rochester
Griess, D. F.............Rochester
Griffin, J. G.............Rochester
Grindlay, J. H.............Rochester
Guerin, B. B.............Rochester
‡Guernsey, D. E.............Minneapolis

Habein, H. C.............Rochester
Hagedorn, A. B.............Rochester
‡Haines, R. D.............Rochester
Haines, S. F.............Rochester
‡Haisten, A. S.............Rochester
Hall, B. E.............Rochester
Hallberg, O. E.............Rochester
Hallenbeck, D. F.............Rochester
Hallenbeck, G. A.............Rochester
Hallendorf, Leonard.............Rochester
‡Hamm, R. S.............Rochester
‡Hammes, E. M., Jr.............Rochester
‡Hampton, H. P.............Tampa, Fla.
‡Hanlon, G. H.............Rochester
Hansbro, G. L.............Rochester
‡Hanson, N. O.............Rochester
Hare, Helen J.............Rochester
Hargraves, M. M.............Rochester

‡Harley, R. D.............Rochester
‡Harper, S. B.............Rochester
Harrington, S. W.............Rochester
‡Hart, G. M.............Rochester
Hartigan, J. D.............Rochester
Hartman, H. R.............Rochester
‡Harvey, George, Jr.............Rochester
Haunz, E. A.............Rochester
Havens, F. Z.............Rochester
Heck, F. J.............Rochester
Heersema, P. H.............Rochester
Heilman, F. R.............Rochester
Heim, D. J.............Rochester
‡Heinrich, W. A.............Rochester
Helland, G. M.............Spring Grove
Helland, J. W.............Spring Grove
Helmholz, H. F.............Rochester
Hempstead, B. E.............Rochester
Hench, P. S.............Rochester
Henderson, E. D.............Rochester
‡Henderson, J. W.............Rochester
‡Henderson, L. L.............Rochester
Henderson, M. S.............Rochester
Henkel, H. B.............Rochester
Herbst, R. F.............Wykoff
Herrell, W. E.............Rochester
Hewitt, Edith S.............Rochester
†Hewitt, R. M.............Rochester
†Heyerdale, O. C.............Rochester
Higgins, R. S.............Rochester
Higginson, J. F.............Rochester
Hill, J. R.............Rochester
‡Hinchey, J. J.............Rochester
Hines, E. A., Jr.............Rochester
Hinshaw, H. C.............Rochester
Hodgson, C. H.............Rochester
Hodgson, J. R.............Rochester
Hollenhorst, R. W.............Rochester
Holmes, C. L.............Rochester
Holt, R. P.............Rochester
Holyoke, J. B.............Rochester
‡Hopping, R. A.............Rochester
Horan, M. J.............Rochester
Horton, B. T.............Rochester
Hosfeld, S. Marjorie.............Rochester
Howe, R. F.............Rochester
Howell, L. P.............Rochester
‡Hughes, T. J.............Rochester
Hunt, A. B.............Rochester
‡Hunter, O. B.............Rochester
‡Hurley, J. P.............Rochester
‡Hutchins, S. P. R.............Rochester

Iams, A. M.............Rochester
Irons, W. E.............Rochester
‡Iverson, H. A.............Rochester
Ivie, J. M.............Nashville, Tenn.

Jackman, R. J.............Rochester
Jackson, H. S.............Rochester
Janes, J. M.............Rochester
Jarboe, J. P.............Rochester
Jennings, D. T.............Rochester
Johnson, C. C.............Rochester
‡Johnson, C. R.............Rochester
Johnson, R. B.............Lanesboro
Joss, C. S.............Rochester
‡Joyce, G. L.............Rochester
Judd, D. B.............Rochester
‡Judd, E. S., Jr.............Rochester
Jump, W. C.............Kasson

Kadish, A. H.............Rochester
‡Kapernick, J. S.............Rochester
Kaplan, J. J.............Rochester
‡Kauvar, A. J.............Rochester
Keating, F. R., Jr.............Rochester
Keeley, J. K.............Rochester
Keith, H. M.............Rochester
Keith, N. M.............Rochester
‡Kemper, C. M.............Rochester
Kennedy, R. L. J.............Rochester
‡Kennedy, T. J.............Rochester
Kepler, E. J.............Rochester
‡Kern, C. E.............Rochester
Kernohan, J. W.............Rochester
Kierland, R. R.............Rochester
Kiernan, P. C.............Rochester
Killins, J. A.............Rochester
Kirby, J. L.............Rochester
‡Kirkland, W. G.............Rochester
Kirklin, B. R.............Rochester
Kirklin, O. L.............Rochester
Kleifgen, G. V. H.............Rochester
‡Klinkenberg, R. B.............Rochester
‡Klontz, C. E., Jr.............Rochester
‡Kloos, E. K.............Rochester
Knisely, R. M.............Rochester
‡Knutson, J. R. B.............Rochester
Knutson, L. A.............Spring Grove
Koelsche, G. A.............Rochester
Kreilkamp, B. L.............Rochester
Krusen, F. H.............Rochester
Kurzweg, F. T.............Rochester
Kvale, W. F.............Rochester

Lake, C. F.	Rochester
Lander, H. H.	Rochester
Lannin, J. C.	Mabel
Large, H. R.	Rochester
Larrabee, W. F., Jr.	Rochester
Larson, R. A.	Rochester
‡Latchem, C. W.	Rochester
Latterell, K. E.	Rochester
Leary, W. V.	Owatonna
Leavitt, M. D.	Rochester
Leddy, E. T.	Rochester
Lehnhoff, H. J., Jr.	Omaha, Nebr.
‡Lemon, W. E.	Rochester
Lemon, W. S.	Rochester
‡Levin, Louis	Rochester
‡Levinson, J. P.	Rochester
Levy, M. S.	Rochester
‡Lien, R. J.	Rochester
Lightfoot, Grace K.	Rochester
Lillie, H. I.	Rochester
Lillie, J. C.	Rochester
‡Lindahl, W. W.	Rochester
Lipscomb, P. R.	Rochester
Little, A. G., Jr.	Vuldosta, Ga.
Lobitz, W. C., Jr.	Rochester
†Lochead, D. C.	Rochester
‡Lofgren, K. A.	Rochester
Logan, A. H.	Rochester
Logan, G. B.	Rochester
Lombardi, A. A.	Rochester
Long, Mary	Rochester
Love, J. G.	Rochester
Lovelace, W. R.	Rochester
Lovelady, S. B.	Rochester
‡Lovering, Joseph	Rochester
‡Lovshin, L. L.	Rochester
Lowe, G. H.	Rochester
‡Luckey, C. A.	Rochester
Ludden, T. E.	Rochester
‡Lueck, A. G.	Rochester
Lundy, J. S.	Rochester
Lynch, J. L.	Rochester
‡Lynch, R. C.	Rochester

‡MacCarty, C. S.	Rochester
†MacCarty, W. C.	Rochester
Macdonald, I. D.	Rochester
‡Macey, H. B.	Rochester
‡MacKay, H. J.	Rochester
MacLean, A. R.	Rochester
Macy, Dorothy	Rochester
Magath, T. B.	Rochester
†Mann, F. C.	Rochester
Manning, J. J.	Rochester
‡Margulies, Harold	Rochester
‡Marr, G. E.	Rochester
Martens, T. A.	Rochester
Martin, D. L.	Rochester
Marvin, C. P.	Rochester
Masson, D. M.	Rochester
Masson, J. C.	Rochester
Mayfield, L. H.	Rochester
Maynard, M. S.	Rochester
Mayo, C. W.	Rochester
Maytum, C. K.	Rochester
‡McCall, C. H.	Rochester
‡McCallig, J. J.	Rochester
‡McClellan, J. T.	Rochester
‡McCloud, C. N.	Rochester
McCuistion, C. H.	Rochester
McDonald, J. R.	Rochester
McEachern, C. G.	Rochester
McGuff, P. E.	Rochester
McKaig, C. B.	Pine Island
‡McKibbin, J. P.	Rochester
‡McNairy, D. J.	Rochester
McQuarrie, H. B.	Rochester
McVicker, J. H.	Rochester
Meadows, J. A.	Rochester
‡Merritt, W. A.	Rochester
‡Messler, J. D.	Rochester
Meyer, A. C.	Rochester
Meyer, W. M.	Rochester
Meyerding, H. W.	Rochester
‡Meyers, W. C.	Rochester
Mezen, J. F.	Rochester
‡Millen, F. J.	Rochester
‡Miller, J. R., Jr.	Rochester
‡Miller, R. C.	Rochester
‡Miller, Sidney	Rochester
Moe, A. E.	Rochester
Moersch, F. P.	Rochester
Moersch, H. J.	Rochester
Montgomery, G. E.	Rochester
Montgomery, Hamilton	Rochester
Morgan, J. L.	Rochester
Morlock, C. G.	Rochester
Morrow, J. R.	Rochester
Morton, R. J.	Rochester
Mousel, L. H.	Rochester
Mulmed, E. I.	Rochester
Multhauf, C. J.	Rochester
‡Murphy, J. T.	Rochester
‡Murphy, M. E.	Rochester
‡Murray, R. A.	Rochester
Musgrove, J. E.	Rochester
Mussey, Mary E.	Rochester
Mussey, R. D.	Rochester
‡Mussey, R. D., Jr.	Rochester
Myers, T. T.	Rochester
‡Nay, R. M.	Rochester
‡Neale, R. M.	Rochester
Nehring, J. P.	Preston
Neibling, H. A.	Rochester
‡Nester, H. D.	Rochester
New, G. B.	Rochester
Nichols, D. R.	Rochester
‡Nickel, W. R.	Rochester
Nickell, D. F.	Rochester
Nickeson, R. W.	Rochester
Nielsen, W. L.	Rochester
Nordland, M. A.	Rochester
Norley, Theodore	Rochester
Norris, N. T.	Caledonia
Norval, M. A.	Rochester
Notier, V. A.	Rochester

O'Brien, J. P.	Rochester
‡Odel, H. M.	Rochester
O'Leary, P. A.	Rochester
Olsen, A. M.	Rochester
Olson, E. A.	Pine Island
Olson, G. E.	West Concord
‡Olson, J. D.	Rochester
Olson, S. W.	Rochester
Onsgard, L. K.	Houston
Osborn, J. E.	Rochester
Owens, A. H., Jr.	Minneapolis

‡Padgett, H. O.	Rochester
Palmer, J. K.	Rochester
Parker, R. L.	Rochester
Parkhill, Edith M.	Rochester
‡Pattison, D. H.	Rochester
‡Paulson, D. L.	Rochester
Paulson, J. A.	Rochester
Payne, J. H.	Rochester
Pearson, C. C.	Rochester
‡Pearson, D. J.	Rochester
Pease, G. L.	Rochester
Pemberton, J. deJ.	Rochester
Pender, J. W.	Rochester
Pennington, R. E.	London, Ky.
‡Perkins, R. F.	Rochester
‡Perry, T. T.	Rochester
‡Peters, G. A.	Rochester
Petersen, M. C.	Rochester
Peterson, W. G.	Minneapolis
‡Phalen, G. S.	Rochester
Phillips, S. K.	Rochester
Piper, M. C.	Rochester
Plummer, W. A.	Rochester
Poirier, R. A.	Rochester
Polley, H. F.	Rochester
Pollock, L. W.	Rochester
‡Polmeteer, F. E.	Rochester
Pool, T. L.	Rochester
Popp, W. C.	Rochester
Powers, F. H.	Rochester
Prangen, A. D.	Rochester
Pratt, J. H.	Rochester
Preston, F. W.	Rochester
‡Preston, L. F.	Rochester
Prickman, L. E.	Rochester
Priestley, J. T.	Rochester
‡Proudfit. C. H.	Mishawaka, Ind.
Pruitt, R. D.	Rochester
Pugh, D. G.	Rochester
Pugh, P. F. H.	Rochester
Pyle, Marjorie M.	Rochester

‡Quattlehaum, Frank	Rochester

‡Radcliffe, James, Jr.	Rochester
Randall, L. M.	Rochester
‡Rasmussen. W. C.	Rochester
‡Raszkowski, H. J.	Rochester
Remington, J. H.	Rochester
‡Rinehart, R. E.	Rochester
Risser, A. F.	Stewartville
Rivers, A. B.	Rochester
Rohertson, H. E.	Rochester
Rohinson, F. J.	Madison, Wis.
Robson, J. T.	Rochester
‡Rogers, J. D.	Rochester
Rogne, W. G.	Spring Grove
Rosenhaum, E. E.	Rochester
Rosenow, E. C.	Cincinnati, Ohio
‡Rosenow, J. H.	Rochester
Rousuck, A. A.	Cleveland Heights, Ohio
Rovelstad, R. A.	Rochester
‡Rowland, W. D.	Rochester
Rucker, C. W.	Rochester
Rulison, E. T., Jr.	Rochester
‡Rushton, J. G.	Rochester
Russ, F. H.	Rochester
Ryan, R. E.	Rochester
Rynearson, E. H.	Rochester

Sanford, A. H.	Rochester
‡Sauer, W. G.	Rochester
Sayre, G. P.	Rochester
Scales, J. R.	Temple, Texas
Schafer, L. A.	Rochester
‡Scheetz, R. J.	Rochester
‡Scheifley, C. H.	Rochester
‡Schlicke, C. P.	Rochester
Schmidt, H. W.	Rochester
‡Schmitt, G. F.	Rochester
‡Schmitz, R. L.	Rochester
‡Schneider, H. H.	Rochester
‡Scholten, R. A.	Rochester
Seebach, Lydia M.	Rochester
Seldon, T. H.	Rochester
‡Sengpiel, G. W.	Rochester
‡Seybold, W. D.	Rochester
‡Sharpe, W. S.	Rochester
‡Sheldon, J. T.	Rochester
*Sheldon, W. D.	Rochester
‡Shepard. V. D.	Rochester
Sheridan, V. E.	Rochester
‡Shick, R. M.	Rochester
‡Shonyo, E. S.	Rochester
‡Shullenherger, C. C.	Rochester
‡Sidell, C. M.	Rochester
‡Sidell, R. H.	Rochester
‡Simonton, K. M.	Rochester
Skillern, P. G., Jr.	Rochester
Slocumb, C. H.	Rochester
‡Sluder, F. S.	Rochester
‡Smalley, R. E.	Rochester
‡Smith, A. L.	Rochester
*Smith, F. D.	Rochester
Smith, F. H.	Rochester
Smith, F. R.	Rochester
Smith, H. L.	Rochester
Smith, L. A.	Rochester
Smith, N. D.	Rochester
Snell, A. M.	Rochester
‡Snider, G. G.	Rochester
Spar, A. A.	Rochester
Sprague, R. G.	Rochester
Spray, Paul	Rochester
‡Stark, F. M.	Rochester
Starks, W. O.	Rochester
Stickney, J. M.	Rochester
Stilwell, G. G.	Rochester
Stokes, G. D.	Rochester
Stout, H. A.	Rochester
‡Stover, Lee	Rochester
Stroebel, C. J., Jr.	Rochester
‡Strom, G. W.	Rochester
Strong, M. L.	Rochester
‡Stuart, R. L.	Rochester
†Sutherland, C. G.	Rochester
‡Svien, H. J.	Rochester
Swanson, V. F.	Rochester

‡Taylor, J. C.	Rochester
Thomas, H. R.	Rochester
‡Thomas, J. F.	Rochester
Thompson, G. J.	Rochester
‡Tice, G. I.	Rochester
‡Tice, W. A.	Rochester
Tillisch, J. H.	Rochester
Tomlin, H. M.	Rochester
‡Tompkins, S. F.	Rochester
‡Tosseland, N. E.	Rochester
‡Trimingham, H. L.	Rochester
Tuohy, E. B.	Rochester
Twyman, Richard	Rochester

Uhrich, E. C.	Rochester
‡Uihlein, Alfred	Rochester
Underdahl, L. O.	Rochester
Upshaw, Bette Y.	Rochester
‡Urban, D. A.	Rochester

‡Vandemark, R. E.	Rochester
Varney, J. H.	Rochester
Vaughn, L. D.	Rochester
Vigran, Myron	Rochester

Wagener, H. P.	Rochester
Wakefield, E. G.	Rochester
‡Wallace, G. T.	Rochester
Walsh, M. N.	Rochester
Walters, Waltman	Rochester
‡Ward, B. H.	Rochester
Watkins, C. H.	Rochester
Watkins, D. H.	Rochester
Waugh, J. M.	Rochester
Wehh, Margaret A.	Rochester
Weber, H. M.	Rochester
Weed, L. A.	Rochester
Weir, J. F.	Rochester
‡Weisel, Wilson	Milwaukee, Wis.
Weismann, R. E.	Rochester
Wellner, T. O.	Rochester
‡Wells, G. R.	Rochester
Wells, J. J.	Rochester
Westrup, J. E.	Lanesboro
White, E. F., Jr.	Rochester
‡White, J. D.	Rochester
‡White, R. R., III	Rochester
‡Whitehouse, F. R.	Rochester
Wieczorowski, Elsie	Rochester
Wilder, R. M.	Rochester
‡Wilder, R. M., Jr.	Rochester
Williams, H. L., Jr.	Rochester
Williams, R. V.	Rushford

Willius, F. A..........Rochester
Wilmer, H. A..........Rochester
Wilson, B. N..........Rochester
Wilson, G. T..........Rochester
Wilson, H. T..........Rochester
Wilson, J. M..........Rochester
Wilson, K. G..........Rochester
Wilson, R. B..........Rochester
Wilson, T. R..........Rochester
Winter, I. F..........Rochester
Wold, L. E..........Rochester
Wolf, A. H..........Rochester
Wollaeger, E. E..........Rochester
Woltman, H. W..........Rochester
Wood, H. G..........Rochester
‡Wood, W. D..........Rochester
‡Wood, W. W., Jr..........Rochester
Woodruff, C. W..........Chatfield
Wozencraft, J. P..........Rochester
‡Wulf, R. F..........Rochester
‡Yeager, C. L..........Rochester
Young, H. H..........Rochester
Zaslow, Jerry..........Rochester
Zuschlag Ella..........Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Regular meetings quarterly
Annual meeting, December
Number of Members: 60

President
Clifford, G. W..........Alexandria

Secretary
Thompson, H. B..........Fergus Falls

Arndt, H. W..........Detroit Lakes
Baker, A. C..........Fergus Falls
Baker, N. H..........Fergus Falls
Bergquist, K. E..........Battle Lake
Blakey, A. R..........Osakis
Boline, C. A..........Battle Lake
Boyd, L. M..........Alexandria
Boysen, J. E..........Pelican Rapids
Boysen, Peter..........Pelican Rapids
Burnap, W. L..........Fergus Falls
Carlson, C. E..........Alexandria
Clifford, G. W..........Alexandria
Combacker, L. C..........Fergus Falls
Drought, W. W..........Fergus Falls
Esser, John..........Perham
Estrem, C. O..........Fergus Falls
Estrem, R. D..........Fergus Falls
Freeman, W. N..........Moscow, Idaho
Griswold, F. E..........Hoffman
Hanson, E. C..........New York Mills
Haskell, A. D..........Alexandria
Heiberg, E. A..........Fergus Falls
Helseth, H. K..........Fergus Falls
Jacobs, G. C..........Fergus Falls
Jacobson, C. W..........Breckenridge
Johnson, O. V..........Fergus Falls
Kierland, P. C..........Alexandria
Leibold, H. H..........Parkers Prairie
Leighton, R. S..........Evansville
Lewis, A. J..........Henning
Love, F. A..........Carlos
Lund, C. J. T..........Fergus Falls
‡McElligott, E. W..........Breckenridge
Miller, W. A..........New York Mills
Mouritsen, G. J..........Fergus Falls
Naegeli, F. A..........Fergus Falls
‡Nelson, R. A..........Fergus Falls
Nelson, W. O. B..........Fergus Falls
Ostergaard, Erling..........Fergus Falls
Parson, Lillian B..........Elbow Lake
Parson, L. R..........Elbow Lake
Patterson, W. L..........Fergus Falls
Paulson, E. C..........Elbow Lake
Paulson, T. S..........Fergus Falls
Randall, A. M..........Ashby
Reeve, E. T..........Elbow Lake
*Rimer, E. W..........Breckenridge
Satersmoen, Theodore..Pelican Rapids
Sather, E. R..........Alexandria
Schamber, W. F..........Parkers Prairie
Schleinitz, F. B..........Battle Lake
Serkland, J. C..........Rothsay
Stemsrud, H. L..........Alexandria
Sutton, H. R..........Hoffman
Tanquist, E. J..........Alexandria
Thompson, H. B..........Fergus Falls
‡Vail, J. B..........Henning
Warner, J. J..........Perham
Wasson, L. F..........Alexandria
Webster, L. J..........Battle Lake
Wray, W. E..........Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July August
Annual meeting, last Monday in January
Number of Members: 391

President
Zimmermann, H. B..........St. Paul

Secretary
Williams, C. K..........St. Paul

Abbott, J. S..........St. Paul
Adair, A. F., Jr..........St. Paul
Ahrens, A. E..........St. Paul
Ahrens, A. H..........St. Paul
Alberts, Max..........St. Paul
Alden, J. F..........St. Paul
Aldes, J. H..........St. Paul
Alexander, F. H..........St. Paul
Armstrong, J. M..........St. Paul
Arnquist, A. S..........St. Paul
Arny, F. P..........St. Paul
‡Arzt, P. K..........St. Paul
Aurelius, J. R..........St. Paul
Ausman, C. F..........St. Paul

Bacon, D. K..........St. Paul
†Bacon, L. C..........St. Paul
Balcome, M. M..........St. Paul
Barnes, R. G., Jr..........Hastings
Barnett, J. M..........St. Paul
Barry, L. W..........St. Paul
Barnsness, Nellie O. N..........St. Paul
Beals, Hugh..........St. Paul
Beech, R. H..........St. Paul
Beek, H. O..........St. Paul
Beer, J. J..........St. Paul
Bell, C. C..........St. Paul
Benepe, J. L..........St. Paul
Bennion, P. H..........St. Paul
Bentley, N. P..........St. Paul
‡Bernstein, W. C..........St. Paul
Bicek, J. F..........St. Paul
Binger, H. E..........St. Paul
Bock, R. A..........St. Paul
Boeckmann, Egil..........St. Paul
Bolender, H. L..........St. Paul
Borg, J. F..........St. Paul
Bouma, L. R..........St. Paul
Brand, G. D..........St. Paul
Bray, E. R..........St. Paul
Briggs, J. F..........St. Paul
Broadie, T. E..........St. Paul
Brodie, W. D..........St. Paul
Brown, J. C..........St. Paul
‡Bulinski, T. J..........St. Paul
Burch, E. P..........St. Paul
Burch, F. E..........St. Paul
Burns, R. M..........St. Paul
Burton, C. G..........St. Paul
Busher, H. H..........St. Paul

Cain, C. L..........St. Paul
Carley, W. A..........St. Paul
Carroll, W. C..........St. Paul
Chadbourn, C. R..........St. Paul
Chatterton, C. C..........St. Paul
Christiansen, A..........St. Paul
†Christison, J. T..........St. Paul
Clark, H. B., Jr..........St. Paul
Clarke, E. K..........Minneapolis
Cochrane, B. B..........St. Paul
Coddon, W. D..........St. Paul
Colby, W. L..........St. Paul
Cole, W. H..........St. Paul
†Collie, H. G..........St. Paul
Colvin, A. R..........St. Paul
Connor, C. E..........St. Paul
Cook, C. K..........St. Paul
Cooper, C. C..........St. Paul
Countryman, R. S..........St. Paul
†Cowern, E. W..........No. St. Paul
Critchfield, L. R..........St. Paul
Crombie, F. J..........No. St. Paul
Crump, J. W..........St. Paul
Culligan, J. M..........St. Paul
Culver, L. G..........St. Paul

Dack, L. G..........St. Paul
†Daugherty, E. B...Marine-on-St. Croix
Davis, E. V..........St. Paul
†Davis, William..........St. Paul
Decker, C. H..........St. Paul
DeCourcy, D. M..........St. Paul
Dedolph, Karl..........St. Paul
Derauf, B. I..........St. Paul
Deters, D. C..........St. Paul
Dickson, T. H..........St. Paul
Dittman, G. C..........St. Paul
Donohue, P. F..........St. Paul
Dovre, C. M..........St. Paul
Drake, C. B..........St. Paul
Dunn, J. N..........St. Paul

Earl, G. A..........St. Paul
Earl, J. R..........St. Paul
Earl, Robert..........St. Paul
Edlund, Gustaf..........St. Paul
Edwards, J. W..........St. Paul
Edwards, T. J..........St. Paul
Eginton, C. T..........St. Paul
Ely, O. S..........So. St. Paul
Emerson, E. C..........St. Paul
Endress, E. K..........St. Paul
Enroth, O. E..........White Bear
Ernest, G. C. H..........So. St. Paul
†Eshelby, E. C..........St. Paul

†Fahey, E. W..........St. Paul
Ferguson, J. C..........St. Paul
Fesler, H. H..........St. Paul
Flanagan, H. F..........St. Paul
Flink, E. B..........St. Paul
Fogarty, C. W..........St. Paul
Fogelberg, E. J..........St. Paul
Foley, F. E. B..........St. Paul
Freeman, C. D..........St. Paul
Freidman, L. L..........St. Paul
Fritz, W. L..........St. Paul
Froats, C. W..........St. Paul

Garbrecht, A. W..........St. Paul
Gardiner, D. G..........St. Paul
Gardner, W. P..........St. Paul
Garrow, D. M..........St. Paul
Geer, E. K..........St. Paul
Gehlen, J. N..........St. Paul
Geist, G. A..........St. Paul
Ghent, Harry..........St. Paul
Gibbs, E. C..........St. Paul
Gilbert, Jarvey..........St. Paul
†Gilfillan, J. S..........St. Paul
Gilkey, S. E..........St. Paul
Gillespie, D. R..........St. Paul
†Ginsberg, William..........St. Paul
Gjerde, W. P..........St. Paul
Goltz, E. V..........St. Paul
Grant, H. W..........St. Paul
Gratzek, Thomas..........St. Paul
Grau, R. K..........St. Paul
Gruenhagen, A. P..........St. Paul

Haavik, J. E..........Minneapolis
Hall, A. R..........St. Paul
Hall, H. H..........St. Paul
Hammes, E. M..........St. Paul
Hammond, J. F..........St. Paul
Hanson, H. B..........St. Paul
Harmon, G. E..........St. Paul
Hartfiel, W. F..........St. Paul
Hartig, Marjorie..........St. Paul
Hartley, E. C..........St. Paul
Hassett, M. F..........St. Paul
Hauser, V. P..........St. Paul
Hayes, A. F..........St. Paul
Heck, W. W..........St. Paul
Hedenstrom, F. G..........St. Paul
Hengstler, W. H..........St. Paul
Hensel, C. N..........St. Paul
Herman, S. M..........St. Paul
Heron, R. C..........St. Paul
Herrmann, E. T..........St. Paul
Hertz, M. J..........St. Paul
Hilger, A. W..........St. Paul
Hilger, D. D..........St. Paul
Hilger, J. A..........St. Paul
Hilger, L. D..........St. Paul
Hilger, L. A..........St. Paul
Hiniker, L. P..........St. Paul
Hochfilzer, J. J..........St. Paul
Hoff, Alfred..........St. Paul
Holcomb, O. W..........St. Paul
Hollinshead, W. H..........St. Paul
Holmen, R. W..........St. Paul
Holt, J. E..........St. Paul
Hopkins, G. W..........St. Paul
Howard, M. A..........St. Paul
Howard, W. S..........St. Paul
Hullsiek, H. E..........St. Paul
Hullsiek, R. B..........St. Paul
‡Hultgen, W. J..........St. Paul
Hurwitz, M. M..........St. Paul

Ide, A. W..........St. Paul
Ikeda, Kano..........St. Paul
Ingerson, C. A..........St. Paul
Janssen, M. E..........St. Paul
Jesion, J. W..........St. Paul

Johanson, W. G..............St. Paul
Johnson, A. M...............St. Paul
Johnson, C. E...............St. Paul
Johnson, J. A...............St. Paul
Jones, E. M.................St. Paul

Kamman, G. R................St. Paul
Kaplan, D. H................St. Paul
Karon, I. M.................St. Paul
Kasper, E. M................St. Paul
Katzovitz, Hyman............St. Paul
Keefe, R. E.................St. Paul
Kelly, J. V.................St. Paul
Kelly, P. H.................St. Paul
Kelsey, C. M................St. Paul
Kendall, R. F...............St. Paul
Kenefick, E. V..............St. Paul
Kennedy, R. L......Eau Claire, Wis.
Kennedy, W. A...............St. Paul
Kenyon, T. J................St. Paul
Kesting, Herman.............St. Paul
King, G. L..................St. Paul
Klein, H. N.................St. Paul
Knauff, M. K................St. Paul
‡Knutson, G. E..............St. Paul
Koepsell, A. A. H...........St. Paul
Kugler, A. A................St. Paul
Kuske, A. W.................St. Paul
Kvitrud, Gilbert............St. Paul

*Langenderfer, F. V.........St. Paul
Lannin, B. G................St. Paul
Larsen, C. L................St. Paul
Larson, Eva-Jane............St. Paul
Larson, J. T................St. Paul
Lauer, D. J.................St. Paul
Lax, M. H...................St. Paul
Leahy, Bartholomew..........St. Paul
Leavenworth, R. O...........St. Paul
Leick, R. M.................St. Paul
Leitch, Archibald...........St. Paul
Lepak, J. A.................St. Paul
†Lerche, William..........Cable, Wis.
Leven, N. L.................St. Paul
Leverenz, C. W..............St. Paul
Levin, Bert.................St. Paul
Levitt, G. X................St. Paul
Lick, C. L..................St. Paul
Lighthourn, E. L............St. Paul
Lilleberg, N. J.............St. Paul
Lippman, H. S...............St. Paul
†Little, W. J...............St. Paul
Loken, S. M.................St. Paul
Lowe, E. R..............So. St. Paul
Lowe, T. A..............So. St. Paul
Lundholm, A. M..............St. Paul
Lynch, F. W.................St. Paul

McAdams, J. B...............St. Paul
McCain, D. L................St. Paul
McCarthy, J. J..............St. Paul
McCarthy, W. R..............St. Paul
McClanahan, J. H..........White Bear
McClanahan, T. S..........White Bear
McEwan, Alexander...........St. Paul
†McLaren, Jennette M.....Minneapolis
Madden, J. F................St. Paul
Malerich, J. A..............St. Paul
Marks, R. W.................St. Paul
Martineau, J. L.............St. Paul
Meade, J. R.................St. Paul
‡Mears, B. J................St. Paul
Medelman, J. P..............St. Paul
Meyerding, E. A.............St. Paul
Moga, J. A..................St. Paul
Molander, H. A..............St. Paul

Moquin, Marie A.............St. Paul
Moren, L. A...........Elko, Nevada
Moriarty, Berenice..........St. Paul
Moriarty, Cecile R..........St. Paul
Muller, R. T................St. Paul

‡Naegeli, A. E..............St. Paul
Nash, L. A..................St. Paul
Nelson, L. A................St. Paul
‡Newell, F. W...............St. Paul
Nichols, A. E...............St. Paul
Noble, J. F.................St. Paul
Noble, J. L.................St. Paul
Nuebel, C. J................St. Paul
Nye, Katherine A............St. Paul
Nye, Lillian L.......Columbia, Miss.

O'Brien, W. M...............St. Paul
O'Connor, L. J..............St. Paul
Oerting, Harry..............St. Paul
Ogden, Warner...............St. Paul
Ohage, Justus Jr............St. Paul
O'Kane, T. W................St. Paul
Olsen, R. L.................St. Paul
Olson, C. A.................St. Paul
O'Reilley, B. E.............St. Paul
Ostergren, E. W.............St. Paul
Ouellette, A. J.............St. Paul

Pearson, F. R...............St. Paul
Pearson, M. M...............St. Paul
Pederson, A. H..............St. Paul
Perry, C. G.................St. Paul
‡Peterson, D. B.............St. Paul
Peterson, H. O..............St. Paul
‡Peterson, J. L. E...........St. Paul
*Peterson, V. N.............St. Paul
Plondke, F. J...............St. Paul
Prendergast, H. J...........St. Paul

Radabaugh, R. C.............Hastings
Ramsay, R. M................St. Paul
†Ramsey, W. R...............St. Paul
Rasmussen, R. C.............St. Paul
Rea, C. E...................St. Paul
Reif, H. J..................St. Paul
Richards, E. T. F...........St. Paul
Richardson, H. E............St. Paul
Richardson, R. J............St. Paul
Rick, P. F. W...............St. Paul
Ritchie, W. P...............St. Paul
Ritt, A. E..................St. Paul
Rogers, S. F................St. Paul
Rolig, D. H.................St. Paul
Rosenbladt, Louis...........St. Paul
Rosenholtz, Burton..........St. Paul
Rosenthal, Robert...........St. Paul
Roth, G. C..................St. Paul
Rothschild, H. J............St. Paul
Roy, P. C...................St. Paul
Ruhberg, G. N...............St. Paul
Rutherford, W. C............St. Paul
Ryan, J. J..................St. Paul
‡Ryan, J. M.................St. Paul
Ryan, M. E..................St. Paul

Sarnecki, M. M..............St. Paul
Satterlund, V. L............St. Paul
Savage, F. J................St. Paul
Schmidtke, R. L.............St. Paul
Schoch, R. B. J.............St. Paul
Schons, Edward..............St. Paul
Schroeckenstein, H. F.......St. Paul
†Schuldt, F. C..............St. Paul
Schulze, A. G...............St. Paul
Schwyzer, H. C..............St. Paul

Scott, E. E.................St. Paul
Selvig, H. S................St. Paul
†Senkler, G. E..............St. Paul
Setzer, H. J................St. Paul
Shannon, W. R...............St. Paul
†Shellman, J. L...Pacific Palisades, Cal.
Shimonek, S. W..............St. Paul
Short, Jacob................St. Paul
Siegel, Clarence............St. Paul
Simons, L. T................St. Paul
Singer, B. J................St. Paul
†Skinner, H. O..............St. Paul
Smisek, E. A................St. Paul
Smith, V. D. E..............St. Paul
Snyder, G. W................St. Paul
Sohlberg, O. I..............St. Paul
Sommers, Ben................St. Paul
Sorem, M. B.................St. Paul
Souster, B. B...............St. Paul
Sprafka, J. M...............St. Paul
Steinberg, C. L.............St. Paul
Sterner, E. G...............St. Paul
Sterner, E. R...............St. Paul
Sterner, O. W...............St. Paul
Stewart, Alexander..........St. Paul
Stinnette, S. E.............St. Paul
Stolpestad, A. H............St. Paul
‡Stolpestad, H. L...........St. Paul
Strate, G. E................St. Paul
Straus, M. L................St. Paul
Swanson, J. A...............St. Paul
Swendson, J. J..............St. Paul

Teisberg, C. B..............St. Paul
Thompson, F. A..............St. Paul
Thoreson, M. C. Bernice..So. St. Paul
Tifft, C. R.................St. Paul
Tracht, R. R................St. Paul
Travis, J. S................St. Paul
Tregilgas, H. R.........So. St. Paul

Varco, R. L.................St. Paul
Veirs, Dean.................St. Paul
Veirs, Ruby J. S............St. Paul
Venables, A. E..............St. Paul
Von der Weyer, W. H.........St. Paul

Waas, C. W..................St. Paul
Walker, A. E................St. Paul
Walsh, F. M.................St. Paul
Walter, C. W................St. Paul
Warren, C. A................St. Paul
Watz, C. E..................St. Paul
Webber, F. L................St. Paul
Weis, B. A..................St. Paul
Weisberg, Maurice...........St. Paul
‡Wenzel, G. P...............St. Paul
Werner, O. S...............Cambridge
Wheeler, M. W...............St. Paul
Whitacre, J. C..............St. Paul
Whitmore, F. W..............St. Paul
Williams, A. B..............St. Paul
Williams, C. K..............St. Paul
Williams, J. A..............St. Paul
Wilson, J. A................St. Paul
Wilson, J. V................St. Paul
Winnick, J. B...............St. Paul
Wold, K. C..................St. Paul
‡Wolfe, H. H................St. Paul
Wolff, H. J.................St. Paul
Wolkoff, H. J...............St. Paul
Word, H. L..................St. Paul

Youngren, E. R..............St. Paul

‡Zachman, L. L..............St. Paul
Zimmermann, H. B............St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties
Regular meetings quarterly
Annual meeting, December
Number of Members: 56

President
Behr, O. K.................Crookston

Secretary
Oppegaard, C. L............Crookston

Adkins, C. M.......Thief River Falls
Anderson, J. T.......Red Lake Falls
Anderson, W. E.....Thief River Falls
Bechtel, M. J.................Warren
Behr, O. K.................Crookston
Berge, D. O...................Roseau
Berlin, A. S.................Hallock
Bertelsen, O. L............Crookston
Biedermann, Jacob..Thief River Falls
Bratrud, Edward....Thief River Falls
Brink, A. A.................Baudette
Brown, L. L................Crookston
Cameron, J. H................Erskine
Carlson, A. E.................Warren
Covey, K. W................Mahnomen

Delmore, John L. Jr...........Roseau
Delmore, John L., Sr..........Roseau
‡Derifield, R. S............Crookston
Erickson, Eskil..............Halstad
‡Furst, J. N..................Hallock
‡Hackie, E. A.................Hallock
Hedemark, H. H....Thief River Falls
Henney, W. H................McIntosh
Hollands, W. H................Fisher
Holmstrom, C. H...............Warren
Johnson, H. C......Thief River Falls
Johnson, R. E..............Crookston
Johnstone, W. W...Thief River Falls
Kirk, G. P.........East Grand Forks
Knutson, G. A................Hallock
Kostick, W. R.................Fertile
Leitschuh, L. F...........Sleepy Eye
Loken, Theodore..................Ada
Lynde, O. G........Thief River Falls
Mellby, O. F.......Thief River Falls
Mercil, W. F...............Crookston

Morley, G. A...............Crookston
Nietfeld, A. D................Warren
Norman, J. F...............Crookston
Oppegaard, C. L............Crookston
Oppegaard, M. O............Crookston
Parsons, J. G..............Crookston
Pearson, L. O................Warroad
Reff, A. R.................Crookston
Rice, H. R............Moscow, Idaho
Sather, Allen..............Crookston
Sather, G. A.................Fosston
‡Sather, R. N...............McIntosh
Sather, R. O...............Crookston
*Shaleen, A. W...............Hallock
Shedlow, Abraham.............Fosston
Starekow, M. D.....Thief River Falls
Stevens, John................Gonvick
Teisberg, J. E..........Middle River
Torgerson, W. B................Oklee
Uhley, C. G................Crookston
Wiltrout, I. G..................Oslo

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annnal meeting, May
Number of Members: 33

President
Penk, E. L.................Springfield

Secretary
Fesenmaier, O. B..........New Ulm

Abbott, C. B.................Sanborn
Anderson, E. M..........Lamberton
Benton, P. C.....................Gibbon
Cairns, R. J..........Redwood Falls
Dubbe, F. H................New Ulm
‡Dysterheft, A. F...............Gaylord
Esser, O. J..................New Ulm
Fesenmaier, O. B..........New Ulm
Fritsche, Albert..........New Ulm
Fritsche, C. J..............New Ulm
Fritsche, T. R..............New Ulm
Gibbons, F. C................Comfrey
Goblirsch, A. P..........Sleepy Eye
Hammermeister, T. F.......New Ulm
Hovde, Rolf.................Winthrop
Just, H. J......................Hastings
Keithahn, E. E...........Sleepy Eye
Kusske, A. L................New Ulm
Mortensbak, H. E...Great Falls, Mont.
Nuessle, A. L...............Springfield
Penk, E. L.................Springfield
Peterson, R. A.....................Vesta
Reineke, G. F...............New Ulm
Saffert, C. A.................New Ulm
Schroeppel, J. E.............Winthrop
Seifert, O. J..................New Ulm
Senescall, C. R.....Enumclaw, Wash.
Shima, G. J..............Minneapolis
Vogel, H. A. L..............New Ulm
Vogel, J. H..................New Ulm
Wahlberg, E. W....Enumclaw, Wash.
†Weiser, G. B................New Ulm
Wohlrabe, E. J...........Springfield

RENVILLE COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month
Annual meeting, November
Number of Members: 22

President
Johnson, W. E...............Morgan

Secretary
Johnson, H. E..........Bird Island

Adams, R. C.............Bird Island
Billings, R. E................Franklin
Brand, W. A.........Redwood Falls
Bushard, W. J..........Minneapolis
Cosgriff, J. A.....................Olivia
Ceplecha, S. F........Redwood Falls
Dordal, J................Sacred Heart
Erickson, R. E................Hector
Fawcett, A. M................Renville
Flinn, T. E...........Redwood Falls
Gaines, E. C............Buffalo Lake
Hartmann, C. M.........Omaha, Neb.
Johnson, H. E.............Bird sland
Johnson, O. H.........Redwood Falls
Johnson, W. E.................Morgan
Lenz, J. R.........................Morton
‡Madland, R. S...................Fairfax
Mesker, G. H.............Cambridge
Passer, A. A.......................Olivia
Potthoff, C. J......Washington, D. C.
Priesinger, J. W...............Renville
‡Rinkey, Eugene...............Renville

RICE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, June
Number of Members, 26

President
Moses, Joseph.............Northfield

Secretary
Mears, R. F................Northfield

Dungay, N. S.............Northfield
Engberg, E. J...............Faribault
Francis, D. W...........Morristown
Hanson, A. M...............Faribault
Hanson, J. W.............Northfield
Huxley, F. R...............Faribault
Lende, Norman............Faribault
Lexa, F. J.....................Lonsdale
‡Lufkin, C. D...............Northfield
McKeon, J. O..........Montgomery
Mears, R. F................Northfield
Meyer, F. C......................Kenyon
Meyer, P. F................Faribault
Moses, Joseph Jr..........Northfield
Moses, R. R......................Kenyon
Nielsen, A. M.............Northfield
Nuetzman, A. W...........Faribault
Robilliard, C. M............Faribault
Rohrer, C. A..............Waterville
Rumpf, C. W...............Faribault
†Rumpf, W. H...............Faribault
Stevenson, F. W...........Faribault
Studer, D. J.................Faribault
Traeger, C. A...............Faribault
Weaver, P. H...............Faribault
Wilson, W. E..............Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties
Regular meetings, second Thursday every month except July and August
Annual meeting, December
Number of Members: 248

President
Boman, P. G..................Duluth

Secretary
Bagley, Elizabeth C..........Duluth

Abraham, A. L................Duluth
Adams, B. S..................Hibbing
‡Addy, E. R....................Gilbert
‡Ahl, C. W.....................Hibbing
Akins, W. M...................Eveleth
Anderson, C. L................Duluth
Anderson, H. R..........Deer River
Arko, J. L......................Hibbing
Armstrong, E. L..............Duluth
Athens, A. G..................Duluth
†Ayres, G. T..........Phoenix, Ariz.

Bachnik, F. W...............Hibbing
Backus, R. W..............Nopeming
Bagley, C. M..................Duluth
Bagley, Elizabeth C..........Duluth
Bagley, W. R..................Duluth
Baich, V. M....................Bovey
Bakkila, H. E..................Duluth
Bardon, Richard..............Duluth
Barney, L. A...................Duluth
‡Barrett, E. E..................Duluth
Batty, J. L....................Hibbing
Becker, F. T...................Duluth
Bender, J. H..................Bigfork
Bepko, Marie K..............Cloquet
Berdez, G. L..................Duluth
Bianco, A. J...................Duluth
Binet, H. E...........Grand Rapids
Blakely, C. C.................Barnum
Blumgren, J. E...............Duluth
Bolz, J. A.............Grand Rapids
Boman, P. G..................Duluth
Bowen, R. L.................Hibbing
Boyer, S. H., Jr..............Duluth
Boyer, S. H., Sr..............Duluth
Braun, O. C.................Nashwauk
Braverman, N. J.............Duluth
Bray, P. N.....................Duluth
Bray, R. B....................Biwabik
Buckley, R. P.................Duluth
*Burton, J. L......................Buhl
Butler, J. K...................Carlton

Cantwell, W. F.....International Falls
Carstens, C. F...............Hibbing
Chapman, T. L...............Duluth
Chermak, F. G.....International Falls
Christenson, C. H............Duluth
Clapp, Stewart................Duluth
*Clark, F. F....................Duluth
Clarke, E. T.......................Buhl
‡Cleaves, W. D..........Grand Rapids
Cole, Frank....................Duluth
Collins, A. N..................Duluth
†Collins, H. C..................Duluth
Coventry, W. A...............Duluth
Coventry, W. D...............Duluth
Cunningham, C. B..........Virginia

Dahlin, I. T....................Aurora
Davies, R. J................Nopeming
Dickson, F. H., Jr............Proctor
Dittrich, R. J..................Duluth
Doolittle, L. E.................Duluth
Doyle, G. C....................Duluth

Eckman, P. F..................Duluth
Eckman, R. J..................Duluth
Ekblad, J. W...................Duluth
Elias, F. J......................Duluth
Emanuel, K. W................Duluth
Eppard, R. M.................Cloquet
Erskine, G. M.........Grand Rapids
Estrem, T. A..................Hibbing
Ewens, H. B..................Virginia

Fawcett, K. R.................Duluth
Fellows, M. F..................Duluth
Ferrell, C. R..........Grand Rapids
Feuling, J. C.............Minneapolis
Fischer, M. McC...............Duluth
Fisketti, Henry.................Duluth
Fredericks, M. G..............Duluth

Gendron, J. F..........Grand Rapids
Gillespie, M. G................Duluth
Goldish, D. R..................Duluth
Goodman, C. E...............Virginia
Gowan, L. R...................Duluth
Grabow, J. J...................Duluth
Graham, A. W...............Chisholm
Grahek, J. P.......................Ely
‡Graves, W. N..................Duluth
Grinley, A. V..........Grand Rapids

‡Hammar, L. M.........Two Harbors
Haney, C. L....................Duluth
Hanson, E. O.................Cloquet
Harlowe, H. D...............Virginia
‡Harri, E. J.....................Winton
Harris, C. N...................Hibbing
Hartman, Jack.................Soudan
Hatch, W. E....................Duluth
‡Hathaway, S. J...............Proctor
Hayes, M. F.................Nashwauk
Hedberg, G. A..............Nopeming
Heiam, W. C.....................Cook
Hilding, A. C...................Duluth
Hill, F. E........................Duluth
Hirschboeck, F. J.............Duluth
Hoff, H. O.......................Duluth
Honke, R. W..................Proctor
Houkom, S. S..................Duluth
Hutchinson, Henry.......Moose Lake

Jacobsom, Clarence.......... Chisholm
Jensen, T. J.......... Duluth
Jeronimus, H. J.......... Duluth
‡Jessico, C. M.......... Duluth
Johnson, K. E.......... Duluth
Johnsrud, L. W.......... Chisholm
Jolin, F. M.......... Bovey
‡Jolin, R. V.......... Grand Rapids

‡Kelly, A. C.......... Duluth
Kemp, M. W.......... Moose Lake
Kingsbury, E. M.......... Moose Lake
Klein, A. D., Jr.......... Chisholm
Klein, Harry.......... Duluth
Knapp, F. N.......... Duluth
Knoll, W. V.......... Duluth
Kohlbry, C. O.......... Duluth
Kotchevar, F. R.......... Eveleth
‡Kozberg, Oscar.......... Moose Lake
Krueger, V. R.......... Nopeming

‡La Bree, R. H.......... Duluth
Laird, A. T.......... Duluth
Lenont, C. B.......... Virginia
Lepak, F. J.......... Duluth
Litman, S. N.......... Duluth
Loofbourrow, E. H.......... Keewatin

McCarty, P. D.......... Ely
†McCoy, Mary K.......... Duluth
McDonald, A. L.......... Duluth
McHaffie, O. L.......... Duluth
McKenna, M. J.......... Grand Rapids
McLeod, J. L.......... Grand Rapids
McNutt, J. R.......... Duluth
Macfarlane, P. H.......... Chisholm
MacRae, G. C.......... Duluth
Magney, F. H.......... Duluth
Magraw, R. M.......... Two Harbors
Malmstrom, J. A.......... Virginia
Manley, J. R.......... Duluth
†Marcley, W. J.......... Minneapolis
Martin, W. C.......... Duluth
Marshall, Helen S.......... Duluth
Mayne, R. M.......... Duluth
Mead, C. H.......... Duluth
Merriman, L. L.......... Duluth
Meyer, J. O.......... Grand Rapids
Minckler, J. E.......... Duluth
Miners, G. A.......... Deer River
Minty, E. W.......... Duluth
Moe, R. J.......... Duluth

Moe, Thomas.......... Moose Lake
‡Mollers, T. P.......... Mountain Iron
Monroe, P. B.......... Cloquet
Monserud, N. O.......... Cloquet
More, C. W.......... Eveleth
Morsman, L. W.......... Hibbing
Mueller, R. F.......... Two Harbors
Mueller, Selma C.......... Duluth
Murray, R. A.......... Coleraine

Neff, W. S.......... Virginia
Nelson, E. H.......... Chisholm
‡Nelson, L. S.......... Hibbing
Nelson, R. L.......... Duluth
Nicholson, M. A.......... Duluth
Norberg, C. E.......... Cloquet
Nutting, R. E.......... Duluth

Olson, A. E.......... Duluth
Olson, A. O.......... Duluth

Palmer, H. A.......... Blackduck
†Parker, O. W.......... Duluth
‡Parker, W. H.......... Chisholm
Parson, E. I.......... Duluth
Pasek, A. W.......... Cloquet
‡Patch, O. B.......... Duluth
‡Patterson, S. A.......... Duluth
Pearsall, R. P.......... Virginia
Pederson, R. C.......... Duluth
Pennie, D. F.......... Duluth
Peterson, E. N.......... Virginia
Peterson, J. H.......... Minneapolis
Pfuetze, K. H.......... Cannon Falls
Power, J. E.......... Duluth
Puumala, R. H.......... Cloquet

Raadquist, C. S.......... Hibbing
Raihala, John.......... Virginia
Raiter, R. F.......... Cloquet
†Robinson, J. M.......... Goshen, N. Y.
Rokala, H. E.......... Virginia
Rood, D. C.......... Duluth
Rosenfield, A. B.......... Hibbing
Rowe, O. W.......... Duluth
Rowles, E. K.......... Coleraine
Rudie, P. S.......... Duluth
Ryan, W. J.......... Duluth

Sach-Rowitz, Alvin.......... Moose Lake
Salter, R. A.......... Virginia
Sandell, S. T.......... Nopeming

Sax, M. H.......... Duluth
Sax, S. G.......... Duluth
Schneider, L. E.......... Duluth
Schroder, C. H.......... Duluth
‡Schweiger, T. R.......... Hibbing
Seashore, R. T.......... Minneapolis
*Shapiro, E. Z.......... Duluth
Shastid, T. H.......... Duluth
Shaw, A. W.......... Virginia
Sher, D. A.......... Virginia
Siegel, J. S.......... Virginia
Sinamark, Andrew.......... Hibbing
Sisler, C. E.......... Grand Rapids
Smith, C. M.......... Duluth
Smith, W. R.......... Grand Marais
Snyker, O. E.......... Ely
Spang, A. J.......... Duluth
Spang, J. S.......... Duluth
Spicer, F. W.......... Duluth
Spurbeck, R. G.......... Cloquet
‡Stewart, D. E.......... Grand Rapids
Strathern, M. L.......... Gilbert
Strobel, W. G.......... Duluth
Stuart, A. B.......... Cloquet
Sutherland, H. N.......... Ely
‡Swanson, P. E.......... Virginia
Swedberg, W. A.......... Duluth
Swenson, A. O.......... Duluth

Taylor, C. W.......... Duluth
Terrell, B. J.......... Nopeming
Tibbetts, M. H.......... Duluth
Tilderquist, D. L.......... Duluth
Tingdale, Carlyle.......... Hibbing
Trytten, E. G.......... Oak Terrace
Tudor, R. B.......... Hibbing
Tuohy, E. L.......... Duluth

Urberg, S. E.......... Duluth

Van Valkenberg, J. D.......... Floodwood

†Walker, A. E.......... Duluth
Wallace, M. O.......... Duluth
Wells, A. H.......... Duluth
Wheeler, D. W.......... Duluth
‡Williams, J. A.......... Hibbing
Winter, J. A.......... Duluth

Young, T. O.......... Duluth

Zeman, E. W.......... Hibbing
Zlatovski, M. L.......... Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the alternate months
Annual meeting, June
Number of Members: 31

President
Kortsch, F. P.......... Prior Lake

Secretary
Schimelpfenig, G. T.......... Chaska

Bodaski, A. A.......... Montgomery
Bratholdt, J. W.......... Watertown
Buck, F. H.......... Shakopee
Cervenka, C. F.......... New Prague
‡Dworak, A. F.......... St. Paul
Emmerson, W. S.......... Mayer
Havel, H. W.......... Jordan

Hebeisen, M. B.......... Chaska
Juergens, H. M.......... Belle Plaine
Klein, J. C.......... Shakopee
Kortsch, F. P.......... Prior Lake
Krieser, A. E.......... Boyd
‡Kucera, L. J.......... Lonsdale
Kucera, S. T.......... Lonsdale
Maertz, W. F.......... St. Paul
Martin, T. P.......... Arlington
Nagel, H. D.......... Waconia
‡Nelson, K. L.......... Montgomery
Ninneman, N. N.......... Waconia
Novak, E. E.......... New Prague

Olson, C. J.......... Belle Plaine
Pearson, B. F.......... Shakopee
*Phillips, W. H.......... Jordan
Pogue, R. E.......... Watertown
‡Ponterio, J. E.......... Shakopee
†Reiter, H. W.......... Shakopee
Schimelpfenig, G. T.......... Chaska
*Shrader, J. S.......... Lamberton
Simons, B. H.......... Chaska
†Westerman, A. E.......... Montgomery
Westerman, F. C.......... Montgomery
‡Wiechman, F. H.......... Montgomery
Wunder, H. E.......... Shakopee

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties
Regular meetings, at call
Annual meeting, October
Number of Members: 51

President
Nealy, D. E.......... Adrian

Secretary
Mork, B. O., Jr.......... Worthington

Anderson, O. W.......... Luverne
Arnold, E. W.......... Adrian
Balmer, A. I.......... Pipestone
Basinger, H. P.......... Windom
Basinger, H. R.......... Mountain Lake
Beckering, Gerrit.......... Edgerton
Benjamin, W. G.......... Pipestone
Bofenkamp, F. W.......... Luverne
Brown, A. H.......... San Ysidro, Calif.
Carlson, J. V.......... Westbrook
*Chadbourn, A. G.......... Heron Lake
Chunn, S. S.......... Pipestone
DeBoer, Hermanus.......... Edgerton

Doman, V. W.......... Lakefield
Doms, H. C. A.......... Slayton
Hallin, R. P.......... Worthington
Halloran, W. H.......... Jackson
Halpern, D. J.......... Brewster
Harrison, P. W.......... Worthington
Hebbel, Robert.......... Minneapolis
Heiberg, O. M.......... Worthington
Hitchings, W. S.......... Lakefield
Hoyer, L. J.......... Windom
Kabrick, O. A.......... Jackson
Kilbride, E. A.......... Worthington
Lohmann, J. G.......... Pipestone
Maitland, E. T.......... Jackson
†Manson, F. M.......... Worthington
Mork, B. O., Sr.......... Worthington
Mork, B. O., Jr.......... Worthington
Nealy, D. E.......... Adrian
Pankratz, P. J.......... Mountain Lake
Pierson, R. F.......... Slayton

Piper, W. A.......... Mountain Lake
Rogers, C. W.......... Minneapolis
Rose, J. T.......... Lakefield
Schade, F. L.......... Worthington
Schmidt, W. R.......... Worthington
Schutz, E. S.......... Mountain Lake
Sherman, C. L.......... Luverne
Slater, S. A.......... Worthington
‡Smith, G. G.......... Fulda
Sogge,, L. L.......... Windom
Sorum, F. T.......... Jasper
Stanley, C. R.......... Worthington
Stevenson, B. M.......... Fulda
Stratte, H. C.......... Windom
Tofte, Josephine.......... Minneapolis
Waller, J. D.......... Wilmont
Wells, W. B.......... Jackson
Williams, C. A.......... Pipestone
Williams, L. A.......... Slayton
†Wright, C. O.......... Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of month
Annual meeting, third Thursday of December
Number of Members: 49

President
Engstrom, G. F..............Belgrade

Secretary
Libert, J. N...............St. Cloud

Baumgartner, F. H..........Albany
Beuning, J. B...............St. Cloud
Brigham, C. F...............St. Cloud
Buscher, J. C...............St. Cloud
Clark, H. B.................St. Cloud
Donaldson, C. S..............Foley
Du Bois, J. F..........Sauk Center
Engstrom, G. F..............Belgrade
Evans, L. M...........Sauk Rapids
Fleming, T. N...............St. Cloud
*Freeman, W. L.............St. Cloud
Friesleben, William.......Sauk Rapids
Gaida, J. B..................St. Cloud
Goehrs, G. H...............St. Cloud
Goehrs, H. W...............St. Cloud
Grant, J. C............Sauk Center
Haberman, Emil..............Osakis
Halenbeck, P. L............St. Cloud
†Hemstead, Werner.......Fergus Falls
Henry, C. J...................Milaca
Jones, R. N................St. Cloud
Kaliher, Howard.................Foley
‡Kern, M. C..................Freeport
Kettlewell, R. B..........Sauk Center
Kohler, D. W..............St. Joseph
Koop, S. H..................Richmond
Lewis, C. B.................St. Cloud
Libert, J. N.................St. Cloud
Luckemeyer, C. J...........St. Cloud
McDowell, J. P.............St. Cloud
Mahowald, A...................Albany
Meyer, A. A..................Melrose
‡Moos, D. J.................Minneapolis
‡Musachio, N. F....................Foley
Myre, C. R.................Paynesville
Nessa, C. B.................St. Cloud
Raetz, S. J................Maple Lake
Richards, W. B.............St. Cloud
Ryan, J. D.....................Milaca
Sandven, N. O...........Paynesville
Schatz, F. J..................St. Cloud
Schmitz, E. J............Holdingford
Sherwood, G. E.................Kimball
Stangl, P. E.................St. Cloud
Stewart, N. E.....St. Petersburg, Fla.
Veranth, L. A...............St. Cloud
Walfred, K. A...............St. Cloud
Watson, W. J............Holdingford
Wenner, W. T................St. Cloud
Zachman, A. H..................Melrose

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, January
Number of Members: 15

President
McEnaney, C. T...........Owatonna

Secretary
Berghs, L. V...............Owatonna

Berghs, L. V...............Owatonna
Dewey, D. H...............Owatonna
Ertel, E. Q..................Ellendale
Hartung, E. H.............Claremont
Kurtin, H. J........Blooming Prairie
McEnaney, C. T...........Owatonna
McIntyre, J. A...........Owatonna
Melby, Benedik......Blooming Prairie
Moorhead, D. E...........Owatonna
Nelson, E. J..............Owatonna
Roberts, O. W.............Owatonna
Schaefer, J. F.............Owatonna
Senn, E. W.................Owatonna
‡Stransky, T. W............Owatonna
Wilkowske, R. J...........Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching,
Lake of the Woods, Morrison, Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall, Winter
Annual meeting, February
Number of Members: 89

President
Lenarz, A. J............Browerville

Secretary
Badeaux, G. I...............Brainerd

Amundson, A. E.........Little Falls
Badeaux, G. I...............Brainerd
Bane, Helen W.............Brainerd
Beise, R. A..................Brainerd
Bigler, I. E.....................Crosby
Borgerson, A. H........Long Prairie
Bosland, H. G..............Verndale
‡Bray, K. E..............Park Rapids
Burns, H. A..............Minneapolis
Cardle, G. E..................Brainerd
†Christie, G. R...........Long Prairie
Christie, R. L............Long Prairie
Cook, J. M.....................Staples
Coombs, C. H..............Cass Lake
†Corrigan, J. E.................Spooner
Crow, E. R..........Ah-Gwah-Ching
Davis, L. F....................Wadena
Davis, L. T....................Wadena
Davis, R. D................Clearbrook
Davis, T. C....................Wadena
‡East, John................Northome
Eiler, John...............Park Rapids
Eyres, T. E..............Pequot Lakes
Fait, R. V..................Little Falls
Fitzsimmons, W. E..........Brainerd
Frost, H. T.....................Wadena
Garlock, A. V.................Bemidji
Gerber, M. P.................Brainerd
Ghostley, Mary C............Puposky
Gifford, B. L..........Long Prairie
†Gilmore, Rowland............Bemidji
Grogan, J. S....................Wadena
Groschupf, T. P..............Bemidji
Grose, F. N....................Clarissa
Halladay, G. J................Brainerd
Hanover, R. D............Little Fork
Healy, R. T........................Pierz
House, Z. E.................Cass Lake
Houston, D. M...........Park Rapids
Hubbard, O. E...............Brainerd
Hubin, E. G..................Deerwood
Idstrom, L. G.........Ah-Gwah-Ching
Jamieson, E. F...............Brainerd
†Johnson, C. E.............Pine River
Johnson, E. W................Bemidji
Knights, J. A.................Bemidji
Koskela, L. E..................Sebeka
Larson, L. J.....................Bagley
Laughlin, J. T.............Grey Eagle
Lee, H. W......................Brainerd
Leemhuis, G. H...................Aitkin
Lenarz, A. J...............Browerville
Lund, W. J.......................Staples
Mark, Hilbert.............Minneapolis
Mason, J. H.......International Falls
McCann, D. F.....................Bemidji
Mitby, I. L........................Aitkin
Mosby, M. E...........Long Prairie
‡Mulligan, A. M...............Brainerd
Nelson, N. P....................Brainerd
Nolan, D. E.............Dayton, Ohio
O'Leary, J. H.............Minneapolis
Pierce, C. H.....................Wadena
Potek, David......International Falls
Quanstrom, V. E...............Brainerd
Ransom, H. R.....................Crosby
†Ratcliffe, J. J....................Aitkin
Ringle, O. F.......................Walker
Sanderson, A. G.......Ah-Gwah-Ching
Schulze, W. M.................Swanville
Simons, E. J....................Swanville
Simons, S. J.......................Akeley
Smith, B. A.........................Crosby
Stafford, C. E..................Baudette
Stein, R. J...........................Pierz
Swedenburg, P. A............Swanville
Thabes, J. A., Sr...............Brainerd
Thabes, J. A., Jr...............Brainerd
Vandersluis, C. W...............Bemidji
Watson, A. M....................Royalton
†Watson, J. D................Minneapolis
Watson, P. T.......................Bemidji
Watson, S. W....................Royalton
Whittemore, D. D.................Bemidji
Will, C. B..........................Bertha
Will, W. W.........................Bertha
Wilson, V. O...................Minneapolis
Wingquist, C. G...................Crosby
Withrow, M. E.....International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, Spring and Fall
Annual meeting, first Thursday after first Monday in October
Number of Members: 15

President
Ellis, E. W......................Elgin

Secretary
Wilson, W. F.............Lake City

Bayley, E. C...............Lake City
Bouquet, B. J..............Wabasha
Bowers, R. N.............Lake City
*Cochrane, W. J...........Lake City
Collins, J. S..................Wabasha
Dempsey, D. P................Kellogg
Ellis, E. W.........................Elgin
Flesche, B. A...............Lake City
Glabe, R. A.................Plainview
Holt, G. W....................Wabasha
Lindberg, D. O. N.........Wabasha
Mahle, D. G.................Plainview
Ochsner, C. G................Wabasha
Replogle, W. H.............Wabasha
‡Wellman, T. G..............Lake City
†Wilson, W. F................Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, every six months
Annual meeting, January
Number of Members: 8

President
Olds, G. H.............New Richland

Secretary
Oeljen, S. C. G...............Waseca

Gallagher, B. J...............Waseca
Hottinger, R. C.............Janesville
McIntire, H. M..............Waseca
Oeljen, S. C. G...............Waseca

Olds, G. H.............New Richland
‡Spittler, R. O...........New Richland
Swenson, O. J.................Waseca
Wadd, C. T...............Janesville

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, Second Tuesday in each month, except June, July, August
Annual meeting, second Tuesday in December
Number of Members: 17

President
Josewski, R. J..............Stillwater

Secretary
Boleyn, E. S...............Stillwater

Boleyn, E. S...............Stillwater
Carlson, R. E...............Stillwater

Haines, J. H...............Stillwater
Holcomb, J. T....Marine-on-St. Croix
Humphrey, W. R...........Stillwater
Johnson, R. G..............Stillwater
Josewski, R. J..............Stillwater
*Kalinoff, D.................Stillwater
McCarten, F. M............Stillwater
Moir, W. W...............Stillwater

Poirier, J. A.............Forest Lake
Ruggles, G. M...........Forest Lake
Samson, E. R...............Stillwater
Sherman, C. H..............Bayport
Stuhr, J. W...............Stillwater
Thompson, V. C...Marine-on-St. Croix
Van Meier, Henry.........Stillwater
Wilkinson, Stella L.......Moose Lake

WATONWAN COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, November
Number of Members: 5

President
Bregel, F. L...............St. James

Secretary
Grimes, H. B................Madelia

Bergman, O. B.............St. James
Bratrud, E. J..............St. James
Bregel, F. L...............St. James

Grimes, H. B................Madelia
Hagen, O. E...............Butterfield

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties
Regular meetings, March, May, September and November
Annual Meeting, September
Number of Members: 24

President
Linde, Herman................Cyrus

Secretary
Rydburg, W. C..............Brooten

Arneson, A. I.................Morris
*Bates, B. V...........Browns Valley
Behmler, F. W...............Morris
Bergan, Otto..................Clinton

Bolsta, Charles.............Ortonville
‡Dahle, M. B...............Glenwood
*Doleman, N. F...............Tintah
Eberlin, E. A..............Glenwood
Elsey, E. M................Glenwood
Elsey, J. R................Glenwood
Fitzgerald, E. T...............Morris
Giesen, A. F...............Starbuck
Karn, B. R................Ortonville
Karn, J. F................Ortonville
Lindberg, A. L.............Wheaton

Linde, Herman................Cyrus
Magnuson, A. E.............Wheaton
‡Merrill, R. W.................Morris
McIver, B. A..................Lowry
Mooney, L. P..............Graceville
Muir, W. F.................Graceville
O'Donnell, D. M...........Ortonville
Oliver, I. L...............Graceville
Ransom, M. L..............Hancock
Rydburg, W. C..............Brooten
Wagner, N. W..............Graceville

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October
Annual meeting, first Monday in January
Number of Members: 29

President
Tweedy, J. A.................Winona

Secretary
Heise, Paul..................Winona

Benoit, F. T..................Winona
Boardman, D. V.............Winona
Christensen, E. E............Winona
Hamlon, J. S...........St. Charles
Heise, Herbert..............Winona
Heise, Paul..................Winona

Heise, W. F. C...............Winona
Heise, W. V..................Winona
Johnston, L. F...............Winona
Keyes, J. D..................Winona
Loomis, G. L.................Winona
‡Lundquist, C. W............Winona
‡Mattison, P. A...............Winona
McLaughlin, E. M...........Winona
Meinert, A. E................Winona
Nauth, B. S..................Winona
Neumann, C. A.............Winona

Page, R. L...............St. Charles
Robbins, C. P................Winona
Roemer, H. J.................Winona
‡Roth, F. D.................Lewiston
Satterlee, H. W.............Lewiston
Schaefer, Samuel............Winona
Steiner, I. W.................Winona
Tweedy, G. J.................Winona
Tweedy, J. A.................Winona
Tweedy, R. B.................Winona
Wilson, R. H.................Winona
Younger, L. I.................Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, October
Number of Members: 17

President
Grundset, O. J..............Montrose

Secretary
Catlin, J. J...................Buffalo

Anderson, W. P..............Buffalo

Bendix, L. M.............Annandale
Catlin, J. J...................Buffalo
Catlin, T. J...................Buffalo
Ellison, F. E...............Monticello
Greenfield, W. T.............Delano
Grundset, O. J.............Montrose
Guilfoile, P. J.................Delano
Harriman, Leonard.....Howard Lake

Hart, W. E..............Monticello
Peterson, O. L.................Cokato
Ridgway, A. M............Annandale
Roholt, C. L................Waverly
Schmidt, Mary A.............Buffalo
Swezey, B. F..................Buffalo
Thielen, R. D............St. Michael
Thompson, Arthur.............Cokato

ALPHABETIC ROSTER

Key to Symbols: *Deceased; †Affiliate or Associate; ‡In Service

Aagaard, G. N., Jr.......Minneapolis
Aanes, A. M...............Red Wing
Abbott, C. B..................Sanborn
Abbott, J. S..................St. Paul
Abbott, K. H...............Rochester
†Aborn, W. H..................Hawley
Abraham, A. L................Duluth
Abramson, Milton........Minneapolis
Adair, A. F., Jr...............St. Paul
Adams, B. S....................Hibbing
Adams, R. C.............Bird Island
Adams, Richard C...........Rochester
‡Addy, E. R.....................Gilbert
Adkins, C. D..............Minneapolis
Adkins, C. M.......Thief River Falls
Adson, A. W................Rochester
Affeldt, D. E....................Kasson
Ahl, C. W......................Chisholm
Ahlfs, J. J......................Caledonia
Ahrens, A. E...................St. Paul
Ahrens, A. H...................St. Paul
‡Aita, J. A.....................Rochester
Akester, Ward..........Fergus Falls
Akins, W. W....................Eveleth
‡Albers, G. D................Rochester
*Alberts, M. W................St. Paul
Albrecht, H. H..........Taylors Falls
Alden, J. F......................St. Paul
‡Aldes, J. H.....................St. Paul
Aldrich, C. A................Rochester
†Alexander, F. H.............St. Paul
Alexander, H. A.........Minneapolis
Aling, C. A.................Minneapolis
Aling, C. P.................Minneapolis
*Allen, C. C.......................Austin
Allen, E. V. N...............Rochester
Allen, H. B.......................Austin
Allen, H. W................Minneapolis
*Allison, R. G............Minneapolis
Altnow, H. O..............Minneapolis
Alvarez, W. C...............Rochester
Amberg, Samuel............Rochester
Ambrusko, J. S.............Rochester
Amundsen, A. E..........Little Falls
Andersen, A. G...........Minneapolis
Andersen, S. C...........Minneapolis
Anderson, C. D.............Rochester
Anderson, C. L.................Duluth
Anderson, D. D..........Minneapolis
Anderson, D. P., Jr............Austin
Anderson, E. D..........Minneapolis
Anderson, E. M...........Lamberton
*Anderson, Earl M..........Rochester
Anderson, E. R..........Minneapolis
Anderson, F. J...........Minneapolis
Anderson, H. R...........Deer River
Anderson, J. K...........Minneapolis
Anderson, J. T........Red Lake Falls
Anderson, K. W..........Minneapolis
Anderson, M. J.............Rochester
Anderson, M. W............Rochester
‡Anderson, N. E..............Harmony
Anderson, O. W...............Luverne
Anderson, R. E................Willmar
Anderson, S. H.............Red Wing
‡Anderson, U. S..........Minneapolis
‡Anderson, W. P...............Buffalo
Anderson, W. E.....Thief River Falls
Anderson, W. T..........Minneapolis
Andreassen, E. C.........Minneapolis
Andresen, K. D...........Minneapolis
Andrews, R. N...............Mankato
Andrews, R. S............Minneapolis
Arends. A. L........Jamestown, N. D.
Arey, S. L.................Minneapolis
Arko, J. L......................Hibbing
Arlander. C. E...........Minneapolis
Arling, L. S..............Minneapolis
Arling, P. A..................Rochester
Armstrong, E. L...............Duluth
*Armstrong, J. M..............St. Paul
Arndt, H. W...........Detroit Lakes
Arneson, A. I....................Morris
Arnold, A. W.............Minneapolis
Arnold, D. C.............Minneapolis
Arnold, E. W....................Adrian
Arnquist, A. S.................St. Paul
Arnson. J. M....................Benson
Arny. F. P.......................St. Paul
Arvidson, C. G...........Minneapolis
‡Arzt, P. K.......................St. Paul
Ashburn. F. S................Rochester
Ashley, W. F.................Rochester
Askren, E. L., Jr............Rochester
Athens, A. G....................Duluth
‡Atwater, J. S................Rochester
Aune, Martin.............Minneapolis
Aurand, W. H............Minneapolis
Aurelius, J. R..................St. Paul
Ausman, C. F..................St. Paul

†Ayres, G. T..........Phoenix, Ariz.

Babb, F. S.....................Rochester
Bachnik, F. W..................Hibbing
Backus, R. W.................Nopeming
Bacon, D. K.....................St. Paul
Bacon, J. F....................Rochester
†Bacon, L. C...................Ramsey
Badeaux, G. I.................Brainerd
Baggenstoss, A. H..........Rochester
Bagley, C. M......................Duluth
Bagley, Elizabeth C..............Duluth
Bagley, W. R......................Duluth
Baich, V. M........................Bovey
*Bailey, H. B...................Fairmont
Bailey, R. B....................Fairmont
Bair, H. L.......................Rochester
Baird, J. W...................Minneapolis
Baken, M. P.................Minneapolis
Baker, A. B..................Minneapolis
Baker, A. T..................Minneapolis
Baker, A. C.................Fergus Falls
Baker, E. L..................Minneapolis
Baker, G. S....................Rochester
Baker, H. R......................Hayfield
Baker, Looe...................Minneapolis
Baker, N. H................Fergus Falls
Baker, R. L......................Hayfield
Bakkila, H. E....................Duluth
Balcome, M. M.................St. Paul
‡Baldigo, E. M...............Red Wing
Balfour, D. C..................Rochester
‡Balfour, D. C., Jr...........Rochester
Balfour, W. M.................Rochester
Balkin, S. G...................Minneapolis
Balmer, A. I....................Pipestone
Bane, Helen W..................Brainerd
‡Bank, H. E...................Minneapolis
‡Banner, E. A..................Rochester
†Barber, J. P.................Minneapolis
Bardon, Richard....................Duluth
Bargen, J. A....................Rochester
Barker, N. W...................Rochester
Barnes, A. R....................Rochester
Barnes, R. G., Jr................Hastings
Barnett, J. M....................St. Paul
Barney, L. A.......................Duluth
Barr, L. C.......................Albert Lea
Barr, M. M......................Rochester
Barr, R. N........................St. Paul
Barr, W. H...........................Wells
‡Barrett, E. E.....................Duluth
Barron, Moses...............Minneapolis
Barry, L. W.......................St. Paul
Barsness, Nellie O. N........St. Paul
Basinger, H. P.................Windom
Basinger, H. R.......Mountain Lake
Bateman, Olive L.........Minneapolis
*Bates, B. V............Browns Valley
Batty, J. L.........................Hibbing
Baumgartner. F. H..............Albany
Baxter. S. H..................Minneapolis
Bayard, H. F..................Minneapolis
Bayley, E. C......................Lake City
Bayrd, E. D......................Rochester
Beach, Northrup............Minneapolis
Beals, Hugh......................St. Paul
†Beard, A. H..................Minneapolis
‡Beard, Crowell...............Rochester
Beare, J. B......................Rochester
Bearzy, H. J.....................Rochester
Bechtel, M. J.......................Warren
Becker, F. T.........................Duluth
Beckering, Gerrit..............Edgerton
‡Beckjord, P. R..................Willmar
Beckman, W. G...San Francisco, Calif.
Bedford, E. W................Minneapolis
Beech, R. H.......................St. Paul
Beek, H. O........................St. Paul
Beer, J. J...........................St. Paul
Behmler, F. W.....................Morris
Behr, O. K......................Crookston
Beise, R. A.......................Brainerd
‡Beizer, L. H....................Rochester
Bell, C. C..........................St. Paul
†Bell, E. T.....................Minneapolis
Belote, G. B....................Caledonia
Belzer, M. S..................Minneapolis
Bender, J. H......................Big Fork
Bendix, L. H....................Annadale
Benedict, W. L.................Rochester
Benepe, J. L......................St. Paul
Benesh, L. A..................Minneapolis
Benesh, N. G..................Minneapolis
Benjamin, A. E...............Minneapolis
Benjamin, E. G...............Minneapolis
Benjamin, H. G...............Minneapolis
Benjamin, W. G................Pipestone
Benn, F. G......................Minneapolis
‡Bennett, J. G..................Rochester
‡Bennett, J. K..................Rochester

‡Bennett, W. A.................Rochester
Bennion, P. H....................St. Paul
Benoit, F. T........................Winona
Benson, A. J....................Rochester
Bentley, N. P.....................St. Paul
Benton, P. C.......................Gibbon
Bepko, Marie K.................Cloquet
Berdez, G. L.........................Duluth
Bergan, Otto........................Clinton
Berge, D. O........................Roseau
Bergen, C. T.....................Bricelyn
Berger, A. G..................Minneapolis
Bergh, G. S....................Minneapolis
Bergh, L. N.....................Montevideo
Bergh, S. M....................Minneapolis
Berghs, L. V...................Owatonna
Bergman, O. B..................St. James
Bergquist, K. E...............Battle Lake
Berkman, D. M.................Rochester
Berkman, D. S..................Rochester
Berkman, J. M..................Rochester
Berkwitz, N. J.................Minneapolis
Berlin, A. S........................Hallock
Berman, Reuben..............Minneapolis
‡Bernstein, W. C..................St. Paul
Bertelson, O. L.................Crookston
Bessesen, A. N., Jr.......Minneapolis
Bessesen, D. H...............Minneapolis
Bessesen, W. A..............Minneapolis
Beuning, J. B....................St. Cloud
Bianco, A. J.........................Duluth
Bicek, J. F..........................St. Paul
Bickel, W. H.....................Rochester
Biedermann, Jacob..Thief River Falls
Bieter, R. N....................Minneapolis
Bigelow, C. E..............Dodge Center
Bigler, I. E..........................Crosby
Billings, R. E.....................Franklin
Binet, H. E....................Grand Rapids
Binger, H. E.......................St. Paul
Binger. M. W.....Chattanooga, Tenn.
Black, A. S., Jr..................Rochester
Black, B. M.......................Rochester
‡Black, W. A.....................Rochester
Blackmore, S. C..............Minneapolis
Blaisdell, J. S...................Rochester
‡Blake, Allen......................Hopkins
Blake, James.......................Hopkins
Blake, James A...................Hopkins
‡Blake, P. S.........................Hopkins
Blakely, C. C.......................Barnum
Blakey, A. R.........................Osakis
Bloedel, T. J. G...............Minneapolis
Blomberg, W. R................Princeton
Blumenthal, J. S..............Minneapolis
‡Blumgren, J. E.....................Duluth
‡Blumstein, Alex..............Minneapolis
Boardman, D. V....................Winona
Bock, R. A............................St. Paul
Bockman, M. W. H.........Minneapolis
Bodaski, A. A.................Montgomery
Boeckmann, Egil..................St. Paul
Boehrer, J. J., Jr..............Minneapolis
Bofenkamp, F. W................Luverne
Boies, L. R......................Minneapolis
Bolender, H. L......................St. Paul
Boleyn, E. S......................Stillwater
Boline, C. A.....................Battle Lake
Bolsta, Charles..................Ortonville
Bolz, J. A......................Grand Rapids
Boman, P. G..........................Duluth
Boody, G. J., Jr....................Dawson
Booth, A. E......................Minneapolis
Boothby, W. M....................Rochester
Boreen, C. A.....................Minneapolis
Borg, J. F..............................St. Paul
Borgerson, A. H.............Long Prairie
Borgerson, M. A...........Hanley Falls
Borgeson, E. J..................Minneapolis
Borman, C. N...................Minneapolis
Borowicz, L. A.................Minneapolis
Bosland, H. G......................Willmar
Bossert, C. S..........................Mora
Bouma, L. R..........................St. Paul
Bouquet, B. J......................Wabasha
Bowen, R. L..........................Hibbing
Bowers, R. N......................Lake City
Bowing. H. H.....................Rochester
Boyd, L. M.......................Alexandria
Boyer, S. H.............................Duluth
Boyer, S. H., Jr.......................Duluth
Boynton, Ruth E..............Minneapolis
Boysen, Herbert.....................Madelia
‡Boysen, J. E................Pelican Rapids
Boysen, Peter..............Pelican Rapids
Braasch, W. F.....................Rochester
Bradley, W. F.....................Rochester
‡Bradshaw, S. P.................Rochester
Brand, G. D..........................St. Paul
Brand, W. A..................Redwood Falls
Brandes, R. W....................Rochester

Branham, D. S............Albert Lea
Branton, A. F.......Nashville, Tenn.
Branton, B. J...............Willmar
Bratholdt, J. W...........Watertown
Bratrud, A. F............Minneapolis
Bratrud, Edward....Thief River Falls
Bratrud, T. E............Minneapolis
Bratrude, E. J..............St. James
Braun, O. C...............Nashwauk
Braverman, N. J..............Duluth
Bray, E. R...................St. Paul
‡Bray, K. E..............Park Rapids
Bray, P. N...................Duluth
Bray, R. B..................Biwabik
Bregel, F. L...............St. James
Brekke, H. J............Minneapolis
‡Breslow, Lester.............Rochester
Briggs, J. F................St. Paul
Briggs, N. M...............Rochester
Brigham, C. F.............St. Cloud
Brigham, F. T..............Watkins
Brill, Alice K............Minneapolis
‡Brindley, G. V., Jr.........Rochester
Brink, A. A................Baudette
Brink, D. M..............Hutchinson
Broadie, T. E..............St. Paul
Broders, A. C.............Rochester
Brodie, W. D...............St. Paul
Brooks, C. N............Minneapolis
‡Brooksby, W. A............Rochester
Brown, A. E...............Rochester
Brown, A. H.......San Ysidro, Calif.
†Brown, E. D..............Paynesville
‡Brown, G. E., Jr............Pine City
Brown, H. A..............Rochester
Brown, J. C.................St. Paul
‡Brown, J. R................Rochester
Brown, L. L...............Crookston
‡Brown, M. H...............Rochester
‡Brown, P. W...............Rochester
‡Brown, S. P.............Minneapolis
Brown, W. D............Minneapolis
‡Browne, H. C., Jr..........Rochester
‡Browning, W. H............Rochester
Brownstone, Manuel........Sandstone
Brunsting, L. A.............Rochester
Brusegaard, J. F...........Red Wing
Brutsch, G. C............Minneapolis
Bryan, A. L................Rochester
‡Bryant, F. L............Minneapolis
‡Bryson, J. C...............Rochester
Buchstein, H. F..........Minneapolis
Buck, F. H................Shakopee
‡Buck, R. M................Rochester
Buckley, R. P................Duluth
Buie, L. A.................Rochester
‡Bulinski, T. J...............St. Paul
Bulkley, Kenneth........Minneapolis
Bunker, B. W..................Anoka
Burch, E. P.................St. Paul
Burch, F. E.................St. Paul
Burchell, H. B.............Rochester
‡Burkhart, R. J............Rochester
Burlingame, D. A............St. Paul
Burnap, W. L...........Fergus Falls
‡Burns, F. M.....................Milan
Burns, H. A..............Minneapolis
‡Burns, L. S............So. St. Paul
Burns, M. A....................Milan
Burns, R. M................St. Paul
Burton, C. G................St. Paul
*Burton, J. L.....................Buhl
Buscher, J. C...............St. Cloud
Bush, R. P.................Rochester
Bushard, W. J...........Minneapolis
Busher, H. H................St. Paul
Butler, J. K.................Carlton
Butt, H. R..................Rochester
Butturff, C. R...............Freeborn
Butzer, J. A.................Mankato
Buzzelle, L. K...........Minneapolis

Cable, M. L.............Minneapolis
‡Cabot, C. M............Minneapolis
Cabot, V. S.............Minneapolis
Cady, L. H..............Minneapolis
Cain, C. L....................St. Paul
Cairns, R. J............Redwood Falls
‡Caldwell, H. W.............Rochester
Calhoun, F. W............Albert Lea
‡Call, J. D...................Rochester
Callahan, F. F.........Ah-Gwah-Ching
Callerstrom, G. W........Minneapolis
Calmenson, Marvin.........Rochester
Cameron, I. L...........Minneapolis
Cameron, J. H................Erskine
‡Cameron, J. M.............Rochester
Camp, J. D.................Rochester
Camp, W. E..............Minneapolis
‡Campbell, C. M............Rochester
‡Campbell, D. C.............Rochester
Campbell, J. R..............Rochester
Campbell, L. M.........Minneapolis
Campbell, O. J...........Minneapolis
Canfield, W. W.............Houston
Cantwell, W. F.....International Falls

Cardle, A. E.............Minneapolis
Cardle, G. E..................Brainerd
Carey, J. B..............Minneapolis
Carley, W. A................St. Paul
Carlson, A. E..................Warren
Carlson, C. E............Alexandria
Carlson, J. V..............Westbrook
Carlson, Lawrence........Minneapolis
Carlson, L. T............Minneapolis
Carlson, R. E..............Stillwater
Carman, J. E..........Detroit Lakes
‡Carmona, M. G.............Rochester
Caron, R. P.............Minneapolis
Carpenter, R. E............Rochester
Carr, D. T..................Rochester
Carroll, W. C................St. Paul
Carryer, H. M..............Rochester
Carstens, C. F...............Hibbing
Caspers, C. G............Minneapolis
Catinella, P. J.............Rochester
Catlin, J. J...................Buffalo
Catlin, T. J...................Buffalo
Cavanor, F. T............Minneapolis
Ceder, E. T................Rochester
Ceplecha, S. F.........Redwood Falls
Cervenka, C. F..........New Prague
*Chadbourn, A. G.........Heron Lake
Chadbourn, C. R............St. Paul
Challman, S. A..........Minneapolis
Chambers, W. C..........Blue Earth
‡Chapman, A. S.............Rochester
‡Chapman, J. P., Jr.........Rochester
Chapman, T. L...............Duluth
Chatterton, C. C.............St. Paul
Chermak, F. G.....International Falls
Chesley, A. J............Minneapolis
Chesley, G. L...............Rochester
Christensen, C. H............Duluth
Christensen, E. E...........Winona
Christensen, N. A...........Rochester
Christenson, G. R.........Minneapolis
Christiansen, A..............St. Paul
Christianson, H. W.......Minneapolis
†Christie, G. R...........Long Prairie
Christie, R. L...........Long Prairie
†Christison, J. T. ....St. Paul
Chunn, S. S................Pipestone
Ciaramelli, Letizia C.........Rochester
Clagett, O. T...............Rochester
Clapp, Stewart................Duluth
*Clark, F. F...................Duluth
Clark, F. H................Rochester
Clark, H. B................St. Cloud
Clark, H. B., Jr.............St. Paul
†Clark, H. S.............Minneapolis
Clark, L. W...........Spring Valley
Clarke, E. K.............Minneapolis
Clarke, E. T......................Buhl
Clarkson, W. R............Rochester
Clay, L. B.................Hennepin
Claydon, H. F.............Red Wing
Claydon, L. E.............Red Wing
‡Cleaves, W. D.........Grand Rapids
Clement, J. B..........Lester Prairie
‡Cleveland, W. H............Rochester
Clifford, G. W............Alexandria
Clifton, T. A................Chatfield
Clothier, E. F..............Elk River
‡Cluxton, H. E., Jr..........Rochester
Cochrane, B. B..............St. Paul
Cochrane, R. F..........Minneapolis
*Cochrane, W. J............Lake City
Coddon, W. D...............St. Paul
‡Cohen, B. A.............Minneapolis
Cohen, S. S..............Minneapolis
Colby, W. L.................St. Paul
Cole, Frank...................Duluth
Cole, W. H...................St. Paul
†Collie, H. G..................St. Paul
Collins, A. N..................Duluth
†Collins, H. C..................Duluth
Collins, J. S.................Wabasha
Colp, E. A...............Minneapolis
Colvin, A. R.................St. Paul
Combacker, L. C.........Fergus Falls
Comfort, M. W.............Rochester
Condit, W. H............Minneapolis
‡Condon, W. B.............Rochester
Conley, F. W...............Rochester
†Conner, H. M..............Rochester
Connolly, C. J..............Rochester
Connor, C. E................St. Paul
Cook, C. K...................St. Paul
Cook, E. N.................Rochester
Cook, J. M....................Staples
Coombs, C. H...............Cass Lake
Cooper, C. C..................St. Paul
Cooper, M. D.............Winnebago
Cooper, Talbert.............Rochester
‡Cooper, W. L...............Rochester
‡Copsey, H. G...............Rochester
Corbett, J. F............Minneapolis
‡Corbitt, R. W...............Rochester
Corniea, A. D...........Minneapolis
Correa, D. H...............Rochester
†Corrigan, J. E................Spooner

Cosgriff, J. A....................Olivia
Costin, M. E., Jr............Rochester
Coulter, E. B............Minneapolis
Counseller, V. S............Rochester
Countryman, R. S...........St. Paul
Covell, W. W...............St. Peter
Coventry, M. B.............Rochester
Coventry, W. A...............Duluth
Coventry, W. D...............Duluth
Covey, K. W...............Mahnomen
Cowan, D. W.............Minneapolis
†Cowern, E. W...........No. St. Paul
Cox, W. B..................Rochester
Cox, W. F..................Rochester
‡Cragg, R. W................Rochester
‡Craig, W. McK..............Rochester
Cranmer, R. R..........Minneapolis
Cranston, R. W..........Minneapolis
Creevy, C. D............Minneapolis
Creighton, R. H.........Minneapolis
Crewe, J. E.................Rochester
Critchfield, L. R.............St. Paul
Crombie, F. J...........No. St. Paul
Cronkite, A. E..............Rochester
Cronwell, B. J.................Austin
Crow, E. R...........Ah-Gwah-Ching
Crowley, D. F., Jr..........Rochester
Crump, J. W.................St. Paul
Culligan, J. M...............St. Paul
Culligan, L. C...........Minneapolis
Culver, L. G..................St. Paul
Cumming, H. A..........Minneapolis
Cummings, D. W. Oklahoma City, Okla.
Cunningham, B. P...........Rochester
Cunningham, C. B...........Virginia
*Curtin, J. F.............Minneapolis
Curtis, R. A.................LeCenter
‡Cusick, P. L................Rochester
‡Custer, M. D...............Rochester
Cutts, George............Minneapolis

Dack, L. G...................St. Paul
Dady, E. E..............Minneapolis
Dafoe, W. A................Rochester
Dahl, E. O..............Minneapolis
Dahl, G. A..................Mankato
Dahl, J. A...............Minneapolis
‡Dahle, M. B................Glenwood
‡Dahleen, H. C..............Rochester
Dahlin, I. T....................Aurora
Daignault, Oscar..............Benson
Daniel, D. H............Minneapolis
Danielson, K. A...........Litchfield
Danielson, Lennox..........Litchfield
Darling, J. P................Rochester
†Daugherty, E. B...Marine-on-St. Croix
‡Daugherty, G. W...........Rochester
Daut, R. V..................Rochester
*Davies, L. T................Rochester
Davies, R. J...............Nopeming
Davis, A. C.................Rochester
Davis, E. V...................St. Paul
Davis, I. G..................Rushford
Davis, J. C..............Minneapolis
Davis, L. T....................Wadena
Davis, L. F....................Wadena
Davis, R. D...............Clearbrook
Davis, R. M.................Rochester
Davis, T. C....................Wadena
†Davis, William..............St. Paul
Day, Lois A.................Rochester
Dearing, W. H., Jr.........Rochester
DeBoer, Hermanus..........Edgerton
Decker, C. H.................St. Paul
DeCourcey, D. M............St. Paul
Dedolph, Karl................St. Paul
†Dedolph, T. H............Minneapolis
DeForest, R. E..............Rochester
Delmore, J. L., Jr............Roseau
Delmore, J. L..................Roseau
del Plaine, C. W.........Minneapolis
‡Demo, P. W.....................Wells
Demo, R. A................Albert Lea
Demong, C. V...............Rochester
†Dempsey, D. P...............Kellogg
Denman, A. V.................Mankato
Dennis, Clarence.........Minneapolis
Derauf, B. I...................St. Paul
‡Derifield, R. S..............Crookston
Desjardins, A. U...........Rochester
Deterling, R. A.............Rochester
Deters, D. C..................St. Paul
Devereaux, T. J..............Wayzata
DeVoe, R. W................Rochester
Dewey, D. H.................Owatonna
Dickson, J. A., Jr...........Rochester
Dickson, F. H., Jr............Proctor
Dickson, T. H................St. Paul
Diehl, H. S..............Minneapolis
Diessner, H. D...........Minneapolis
Dille, R. S...................Rochester
Dittman, G. C................St. Paul
Dittrich, R. J...................Duluth
Dixon, C. F..................Rochester
Dobyns, B. M...............Rochester
Dockerty, M. B.............Rochester

Doehring, P. C., Jr.	Rochester
Dolder, F. C.	Eyota
*Doleman, N. F.	Tintah
Doman, V. W.	Lakefield
Doms, H. C. A.	Slayton
Donaldson, C. S.	Foley
‡Donoghue, F. E.	Rochester
Donohue, P. F.	St. Paul
Donovan, D. L.	Albert Lea
Doolittle, L. E.	Duluth
Dordal, J.	Sacred Heart
Dorge, R. I.	Minneapolis
Dornblaser, H. B.	Minneapolis
Dorsey, G. C.	Minneapolis
‡Douglass, B. E.	Rochester
Dovre, C. M.	St. Paul
Dowidat, R. W.	Minneapolis
‡Downing, A. H.	Minneapolis
Dowswell, W. J.	Kerkhoven
Doxey, G. L.	Minneapolis
Doyle, G. C.	Duluth
Doyle, L. O.	Minneapolis
Drake, C. B.	St. Paul
Drake, C. R.	Minneapolis
†Drake, F. A.	Lanesboro
‡Drapiewski, J. F.	Rochester
Dredge, H. P.	Sandstone
Drill, H. E.	Hopkins
Drips, Della G.	Rochester
Drought, W. W.	Fergus Falls
‡Drumheller, J. F.	Rochester
Dry, T. J.	Rochester
Dubbe, F. H.	New Ulm
DuBois, J. F.	Sauk Centre
Duff, E. R.	Minneapolis
Dukelow, D. A.	Minneapolis
‡DuMais, A. F.	Rochester
†Dumas, A. G.	Minneapolis
Duncan, J. W.	Moorhead
Dungay, N. S.	Northfield
‡Dunlap, D. L.	Rochester
Dunlap, E. H.	Minneapolis
Dunn, G. R.	Minneapolis
Dunn, J. N.	St. Paul
Dunn, J. H.	Rochester
DuPont, J. A.	Excelsior
Duryea, W. M.	Minneapolis
†Dutton, C. E.	Minneapolis
Dvorak, B. A.	Minneapolis
Dwan, P. F.	Minneapolis
‡Dworak, A. F.	St. Paul
‡Dworsky, S. D.	Minneapolis
‡Dysterheft, A. F.	Gaylord
Earl, G. A.	St. Paul
Earl, J. R.	St. Paul
Earl, Robert	St. Paul
‡East, J. P.	Northome
Eaton, L. M.	Rochester
Eberlin, E. A.	Glenwood
‡Eckdale, J. E.	Lyle
‡Eckhardt, C. L.	Austin
Eckman, P. F.	Duluth
Eckman, R. J.	Duluth
Ederer, J. J.	Minneapolis
Edlund, Gustaf	St. Paul
Edwards, J. W.	St. Paul
†Edwards, R. T.	Big Fork, Mont.
Edwards, T. J.	St. Paul
Egan, Sherman	Rochester
Eginton, C. T.	St. Paul
‡Ehni, G. J.	Rochester
Ehrenberg, C. J.	Minneapolis
Ehrlich, S. P.	Minneapolis
Eich, Matthew	Minneapolis
Eiler, John	Park Rapids
Eisenstadt, D. H.	Minneapolis
Eisenstadt, W. S.	Minneapolis
Eitel, G. D.	Minneapolis
Ekblad, J. W.	Duluth
Elias, F. J.	Duluth
Elkins, E. C.	Rochester
Ellingson, A. R.	Detroit Lakes
‡Ellingson, E. A.	Rochester
Ellis, E. W.	Elgin
Ellis, F. H.	Rochester
‡Ellison, A. B. C.	Rochester
Ellison, D. E.	Minneapolis
Ellison, F. E.	Monticello
Elsey, E. M.	Glenwood
Elsey, J. R.	Glenwood
Ely, O. S.	So. St. Paul
Emanuel, K. W.	Duluth
Emerson, E. C.	St. Paul
Emerson, G. F.	Rochester
Emmerson, W. S.	Mayer
Emmett, J. L.	Rochester
Emond, A. J.	Farmington
Emond, J. S.	Farmington
Endress, E. K.	St. Paul
Engberg, E. J.	Faribault
Engelhart, P. C.	Minneapolis
Engstrand, O. J.	Minneapolis
Engstrom, G. F.	Belgrade
‡Engstrom, W. W.	Rochester
Enroth, O. E.	White Bear
Eppard, R. M.	Cloquet
Erich, J. B.	Rochester
Erickson, A. O.	Long Prairie
‡Erickson, C. O.	Rochester
‡Erickson, D. J.	Rochester
Erickson, Eskil	Halstad
Erickson, R. E.	Hector
Erickson, R. F.	Minneapolis
Ericson, R. M.	Minneapolis
Ericson, Swan	Le Sueur
Ernest, G. C. H.	So. St. Paul
Erskine, G. M.	Grand Rapids
Ertel, E. O.	Ellendale
†Eshelby, E. C.	St. Paul
Esser, John	Perham
Esser, O. J.	New Ulm
Estes, J. E.	Rochester
Estrem, C. O.	Fergus Falls
Estrem, R. D.	Fergus Falls
Estrem, T. A.	Hibbing
Eusterman, G. B.	Rochester
Evans, E. T.	Minneapolis
Evans, L. M.	Sauk Rapids
Evans, R. D.	Minneapolis
†Evarts, A. B.	Rochester
Evert, J. A., Jr.	Rochester
Ewens, H. B.	Virginia
Eyres, T. E.	Pequot
Faber, J. E.	Rochester
Faber, W. M.	Rochester
†Fahey, E. W.	St. Paul
‡Fahlund, G. T. R.	Rochester
Fahr, G. E.	Minneapolis
Fair, E. E.	Rochester
Fait, R. V.	Little Falls
Fansler, W. A.	Minneapolis
Farber, E. M.	Rochester
‡Farkas, J. V.	Minneapolis
Farrish, R. C.	Sherburn
Farsht, I. J.	Minneapolis
Fawcett, A. M.	Renville
Fawcett, K. R.	Duluth
‡Fawcett, R. M.	Rochester
Feeney, J. M.	Minneapolis
Feinstein, J. Y.	Minneapolis
Feldman, F. M.	Rochester
Fellows, M. F.	Duluth
Fenger, E. P. K.	Oak Terrace
‡Ferguson, F. F.	Rochester
Ferguson, J. C.	St. Paul
Ferguson, W. C.	Walnut Grove
‡Ferguson, W. J., Jr.	Rochester
‡Ferguson, W. J.	Rochester
Ferrell, C. R.	Grand Rapids
Ferris, D. O.	Rochester
Ferris, H. A., Jr.	Rochester
Fesenmaier, O. B.	New Ulm
Fesler, H. H.	St. Paul
‡Fetterly, Warren	Minneapolis
Feuling, J. C.	Minneapolis
Field, A. H.	Farmington
Figi, F. A.	Rochester
‡Fink, D. L.	Minneapolis
Fink, L. W.	Minneapolis
Fink, W. H.	Minneapolis
Fisch, H. M.	Austin
Fischer, Albert	Rochester
Fischer, M. McC.	Duluth
Fisher, J. M.	Willmar
Fisher, I. I.	St. Paul
Fisher, R. L.	Rochester
Fisketti, Henry	Duluth
†Fitzgerald, D. F.	Minneapolis
Fitzgerald, E. T.	Morris
Fitzgibbons, R. J.	Rochester
Fitzsimons, W. E.	Brainerd
Fjeldstad, C. A.	Minneapolis
Flanagan, H. F.	St. Paul
Flanagan, L. G.	Austin
Flasher, Jack	Rochester
Flashman, F. L.	Rochester
Fleming, T. N.	St. Cloud
Flesche, B. A.	Lake City
Flickinger, F. M.	Rochester
Flink, E. B.	St. Paul
Flinn, J. H.	Rochester
Flinn, T. E.	Redwood Falls
Flom, M. G.	Zumbrota
‡Foerster, J. M.	Rochester
‡Fogarty, C. W., Jr.	Rochester
Fogarty, C. W.	St. Paul
Fogelberg, E. J.	St. Paul
Foker, L. W.	Minneapolis
Foley, F. E. B.	St. Paul
Folken, F. G.	Albert Lea
Ford, B. C.	Marshall
Ford, W. H.	Minneapolis
Forney, R. A.	Rochester
Foshager, H. T.	Clara City
Foss, E. L.	Rochester
‡Foss, M. A.	Rochester
Foster, W. K.	Minneapolis
Fowler, L. H.	Minneapolis
Franchere, F. W.	Lake Crystal
Francis, D. W.	Morristown
Frane, D. B.	Minneapolis
‡Frank, J. E.	Marshall
Frank, W. L., Jr.	Minneapolis
Frear, R. R.	Minneapolis
Fredericks, G. M.	Minneapolis
Frederickson, Alice C.	Willmar
Frederickson, G. U. Y.	Willmar
Fredlund, M. L.	Minneapolis
Fredricks, M. G.	Duluth
Freeman, C. D.	St. Paul
Freeman, G. H.	St. Peter
‡Freeman, J. G.	Rochester
Freeman, J. P.	Glenville
*Freeman, W. L.	St. Cloud
Freeman, W. N.	Moscow, Idaho
Freidman, L. L.	St. Paul
Freligh, W. P.	Albert Lea
Fricke, R. E.	Rochester
Fried, L. A.	Minneapolis
Friedell, Aaron	Minneapolis
Friedell, George	Ivanhoe
‡Friedell, M. T.	Rochester
Friend, A. W.	Minneapolis
Friesleben, William	Sauk Rapids
Frisch, F. P.	Willmar
Fritsche, Albert	New Ulm
Fritsche, C. J.	New Ulm
Fritsche, T. R.	New Ulm
Fritz, W. L.	St. Paul
Froats, C. W.	St. Paul
Frost, E. H.	Willmar
Frost, H. T.	Wadena
Frost, J. B.	Minneapolis
Fugina, G. R.	Mankato
Fuller, Alice H.	Minneapolis
Funk, V. K.	Oak Terrace
‡Furst, J. N.	Hallock
Gaarde, F. W.	Rochester
‡Gaarde, F. W., Jr.	Rochester
Gaida, J. B.	St. Cloud
Gaines, E. C.	Buffalo Lake
Gallagher, B. J.	Waseca
Galligan, Margaret M. D.	Minneapolis
Galloway, J. B.	Minneapolis
Gambill, E. E.	Rochester
Gamble, J. W.	Albert Lea
Gamble, P. M.	Albert Lea
Gammell, J. H.	Minneapolis
Garbrecht, A. W.	St. Paul
Gardiner, D. G.	St. Paul
*Gardner, E. L.	Minneapolis
Gardner, V. H.	Fairmont
Gardner, W. P.	St. Paul
Garlock, A. V.	Bemidji
Garrow, D. M.	St. Paul
Garten, J. L.	Minneapolis
Gastineau, C. F.	Rochester
Geer, E. K.	St. Paul
Gehlen, J. N.	St. Paul
Geist, G. A.	St. Paul
Gendron, J. F.	Grand Rapids
Gentry, R. W.	Rochester
Gerber, M. P.	Brainerd
Germo, Charles	Balaton
Ghent, C. H.	St. Paul
Ghormley, R. K.	Rochester
Ghostley, Mary C.	Puposky
Gibbons, F. C.	Comfrey
Gibbs, E. C.	St. Paul
Gibson, R. H.	Rochester
Giere, J. C.	Minneapolis
Giere, R. W.	Minneapolis
Giere, S. W.	Benson
Giesen, A. F.	Starbuck
†Giessler, P. W.	Minneapolis
‡Giffin, H. M.	Rochester
Giffin, H. Z.	Rochester
Giffin, Mary E.	Rochester
Gifford, B. L.	Long Prairie
Gilbert, Harry	Minneapolis
Gilbert, Jarvey	St. Paul
‡Gilbert, M. G.	Minneapolis
Gilbertson, Eva L.	Rochester
†Gilfillan, J. S.	St. Paul
Gilkey, S. E.	St. Paul
Gilles, F. L.	Minneapolis
Gillespie, D. R.	St. Paul
Gillespie, M. G.	Duluth
Gilliland, Martha J.	Rochester
Gilman, L. C.	Willmar
†Gilmore, Rowland	Bemidji
Gingold, B. A.	Minneapolis
†Ginsberg, William	St. Paul
Giroux, A. A.	No. Mankato
Girvin, R. B.	Minneapolis
Gjerde, W. P.	St. Paul
Glabe, R. A.	Plainview
‡Glomset, D. A.	Rochester
Glover, R. P.	Rochester
Goblirsch, A. P.	Sleepy Eye
‡Godwin, B. E.	Minneapolis
Goehrs, G. H.	St. Cloud
Goehrs, H. W.	St. Cloud
*Golberg, M. L.	Minneapolis
‡Goldberg, I. M.	Minneapolis

‡Golden, P. B.	Rochester
Golden, R. F.	Rochester
Goldish, D. R.	Duluth
Goldman, T. I.	Minneapolis
Goldner, M. Z.	Minneapolis
Goltz, E. V.	St. Paul
Good, C. A., Jr.	Rochester
Good, H. D.	Minneapolis
Goodman, C. E.	Virginia
Gordon, N. F.	Rochester
Gordon, P. E.	Minneapolis
‡Gorsuch, M. T.	Rochester
Goss, H. C.	Glencoe
Goss, Martha D.	Glencoe
*Gosslee, G. L.	Moorhead
Gowan, L. R.	Duluth
Grabow, J. J.	Duluth
Graham, A. W.	Chisholm
Graham, F. M.	Rochester
Graham, R. J.	Rochester
Graham, R. B.	Rochester
Grahek, J. P.	Ely
Grant, H. W.	St. Paul
Grant, J. C.	Sauk Center
Gratzek, F. R. E.	Minneapolis
Gratzek, Thomas	St. Paul
Grau, R. K.	St. Paul
Grave, Floyd	Minneapolis
Graves, R. B.	Red Wing
‡Graves, W. N.	Duluth
Gray, F. D.	Marshall
Gray, H. K.	Rochester
Gray, R. F.	Marshall
Gray, R. C.	Minneapolis
Green, R. G.	Minneapolis
‡Green, W. S.	Rochester
Greene, L. F.	Rochester
Greenfield, W. T.	Delano
Griess, D. F.	Rochester
Griffin, J. G.	Rochester
Grimes, B. P.	St. Peter
Grimes, H. B.	Madelia
Grimes, Marian	Minneapolis
Grindlay, J. H.	Rochester
Grinley, A. V.	Grand Rapids
Grise, W. B.	Austin
Griswold, F. E.	Hoffman
Grogan, J. S.	Wadena
Gronvall, P. R.	Minneapolis
Groschupf, T. P.	Bemidji
Grose, F. N.	Clarissa
Gruenhagen, A. P.	St. Paul
Grundset, O. J.	Montrose
Guerin, B. B.	Rochester
‡Guernsey, D. E.	Rochester
Guilbert, G. D.	Wood, Wis.
Guilfoile, P. J.	Delano
Gullixson, Andrew	Albert Lea
Gully, R. J.	Cambridge
Gunderson, N. A.	Minneapolis
Gushurst, E. G.	Minneapolis
Gustason, H. T.	Minneapolis

‡Haavik, J. E.	Minneapolis
‡Hackie, E. A.	Hallock
Habein, H. C.	Rochester
Haberman, Emil	Osakis
Haes, J. E.	Vernon Center
Hagedorn, A. B.	Rochester
Hagen, O. J.	Moorhead
Hagen, O. E.	Butterfield
‡Hagen, W. S.	Minneapolis
†Haggard, G. D.	Minneapolis
Haight, G. G.	Audubon
Haines, J. H.	Stillwater
‡Haines, R. D.	Rochester
Haines, S. F.	Rochester
‡Haisten, A. S.	Rochester
Halenbeck, P. L.	St. Cloud
Hall, A. R.	St. Paul
Hall, B. E.	Rochester
Hall, H. B.	Minneapolis
Hall, H. H.	St. Paul
Hall, J. M.	Minneapolis
Halladay, G. J.	Brainerd
Hallberg, C. A.	Minneapolis
Hallberg, O. E.	Rochester
Hallenbeck, D. F.	Rochester
Hallenbeck, G. A.	Rochester
Hallendorf, Leonard	Rochester
Hallin, R. P.	Worthington
Halloran, W. H.	Jackson
Halpern, D. J.	Brewster
Halpin, J. E.	Rush City
Hamel, A. L.	Minneapolis
Hamlin, G. B.	Minneapolis
Hamlon, J. S.	St. Charles
‡Hamm, R. S.	Rochester
‡Hammar, L. M.	Two Harbors
Hammermeister, T. F.	New Ulm
Hammerstad, L. M.	Minneapolis
Hammes, E. M.	St. Paul
‡Hammes, E. M., Jr.	Rochester
Hammond, A. J. H.	Minneapolis
Hammond, J. F.	St. Paul
‡Hampton, H. P.	Rochester
Haney, C. L.	Duluth
Hankerson, R. G.	Minnesota Lake
‡Hanlon, G. H.	Rochester
Hannah, H. B.	Minneapolis
Hanover, R. D.	Littlefork
Hansbro, G. L.	Rochester
Hansen, C. O.	Minneapolis
Hansen, E. W.	Minneapolis
Hansen, Olga S.	Minneapolis
Hanson, A. M.	Faribault
Hanson, E. O.	Cloquet
Hanson, E. C.	New York Mills
Hanson, H. J.	Minneapolis
Hanson, H. B.	St. Paul
Hanson, H. V.	Minneapolis
Hanson, J. W.	Northfield
Hanson, Lewis	Frost
Hanson, M. B.	Minneapolis
‡Hanson, N. O.	Rochester
Hanson, W. A. H.	Minneapolis
Happe, L. J.	Minneapolis
Hare, Helen J.	Rochester
Hargraves, M. M.	Rochester
‡Harley, R. D.	Rochester
Harlowe, H. D.	Virginia
Harmon, G. E.	St. Paul
‡Harper, S. B.	Rochester
‡Harri, E. J.	Winton
Harriman, Leonard	Howard Lake
Harrington, C. D.	Minneapolis
Harrington, F. E.	Minneapolis
Harrington, S. W.	Rochester
Harris, C. N.	Hibbing
Harrison, P. W.	Worthington
‡Hart, G. M.	Rochester
Hart, V. L.	Minneapolis
Hart, W. E.	Monticello
Hartfiel, W. F.	St. Paul
Hartig, Hermina A.	Minneapolis
Hartig, Marjorie	St. Paul
Hartigan, J. D.	Rochester
Hartley, E. C.	St. Paul
Hartman, H. R.	Rochester
Hartman, Jack	Soudan
Hartmann, C. M.	Omaha, Neb.
Hartnagel, G. F.	Red Wing
Hartung, E. H.	Claremont
Hartzell, T. B.	Minneapolis
‡Harvey, George, Jr.	Rochester
Haskell, A. D.	Alexandria
Hassett, M. F.	St. Paul
Hassett, R. G.	Mankato
Hastings, D. R.	Minneapolis
Hatch, W. E.	Duluth
‡Hathaway, S. J.	Proctor
Hauge, E. T.	Minneapolis
Hauge, M. I.	Clarkfield
Haugen, J. A.	Minneapolis
Haunz, E. A.	Rochester
Hauser, V. P.	St. Paul
Havel, H. W.	Jordan
Havel, T. E.	Blue Earth
Haven, W. K.	Minneapolis
Havens, F. Z.	Rochester
Havens, J. G. W.	Austin
Hawkinson, R. P.	Minneapolis
Hayes, A. F.	St. Paul
Hayes, J. M.	Minneapolis
Hayes, M. F.	Nashwauk
‡Hays, A. T.	Minneapolis
Head, D. P.	Minneapolis
Head, G. D.	Minneapolis
Healy, R. T.	Pierz
Hebbel, Robert	Minneapolis
Hebeisen, M. B.	Chaska
Heck, F. J.	Rochester
Heck, W. W.	St. Paul
Hedback, A. E.	Minneapolis
Hedberg, G. A.	Nopeming
Hedemark, H. H.	Thief River Falls
Hedenstrom, F. G.	St. Paul
Hedenstrom, L. H.	Cambridge
Hedin, R. F.	Red Wing
Heersema, P. H.	Rochester
Hegge, O. H.	Austin
Hegge, R. S.	Austin
Heiam, W. C.	Cook
Heiberg, E. A.	Fergus Falls
Heiberg, O. M.	Worthington
Heilman, F. R.	Rochester
Heim, D. J.	Rochester
Heim, R. R.	Minneapolis
Heimark, J. J.	Fairmont
‡Heinrich, W. A.	Rochester
‡Heinz, I. B.	Hastings
‡Heinz, L. H.	Hastings
Heise, Herbert	Winona
Heise, Paul	Winona
Heise, W. F. C.	Winona
Heise, W. V.	Winona
‡Helferty, J. K.	Tracy
Helland, G. M.	Spring Grove
Helland, J. W.	Spring Grove
Helmholz, H. F.	Rochester
Helseth, H. K.	Fergus Falls
Hempstead, B. E.	Rochester
†Hemstead, Werner	Fergus Falls
Hench, P. S.	Rochester
Henderson, E. D.	Rochester
‡Henderson, J. W.	Rochester
‡Henderson, L. L.	Rochester
Henderson, M. S.	Rochester
Hendrickson, J. F.	Minneapolis
Hendrickson, R. R.	Lake Park
Hengstler, W. H.	St. Paul
Henkel, H. B.	Rochester
Henney, W. H.	McIntosh
Henrikson, E. C.	Minneapolis
Henry, C. J.	Milaca
†Henry, C. E.	Kirksville, Mo.
Henry, M. O.	Minneapolis
Hensel, C. N.	St. Paul
Henslin, A. E.	Le Roy
Henslin, M. E.	Le Roy
Herbert, W. L.	Minneapolis
Herbst, R. F.	Wykoff
Herman, S. M.	St. Paul
Hermanson, P. E.	Hendricks
Heron, R. C.	St. Paul
Herrell, W. E.	Rochester
Herrmann, E. T.	St. Paul
Hertel, G. E.	Austin
Hertz, M. J.	St. Paul
Hertzog, A. J.	Minneapolis
Hesdorffer, M. B.	Minneapolis
Hewitt, Edith S.	Rochester
†Hewitt, R. M.	Rochester
†Heyerdale, O. C.	Rochester
Higgins, J. H.	Minneapolis
Higgins, R. S.	Rochester
‡Higginson, J. F.	Rochester
Hilding, A. C.	Duluth
Hilger, A. W.	St. Paul
Hilger, D. D.	St. Paul
Hilger, J. A.	St. Paul
Hilger, L. D.	St. Paul
Hilger, L. A.	St. Paul
†Hill, Eleanor J.	Minneapolis
Hill, F. E.	Duluth
Hill, J. R.	Rochester
Hillis, S. J.	Minneapolis
‡Hinchey, J. J.	Rochester
Hinckley, R. G.	Minneapolis
Hines, E. A., Jr.	Rochester
Hiniker, L. P.	St. Paul
Hiniker, P. J.	Le Sueur
Hinshaw, H. C.	Rochester
Hirschboeck, F. J.	Duluth
Hirshfield, F. R.	Minneapolis
‡Hitchcock, C. R.	Minneapolis
Hitchings, W. S.	Lakefield
†Hoaglund, A. W.	Los Angeles, Calif.
*Hobbs, C. A.	Minneapoliis
Hochfilzer, J. J.	St. Paul
Hodapp, R. J.	Willmar
Hodge, S. V.	Minneapolis
Hodgson, C. H.	Rochester
Hodgson, J. R.	Rochester
Hoeper, P. G.	Mankato
Hoff, Alfred	St. Paul
Hoff, H. O.	Duluth
Hoffbauer, F. W.	Minneapolis
Hoffert, H. E.	Minneapolis
Hoffman, R. A.	Minneapolis
Hoffman, W. L.	Minneapolis
Hoidale, A. D.	Tracy
Holcomb, J. T.	Marine-on-St. Croix
Holcomb, O. W.	St. Paul
†Holl, P. M.	Minneapolis
Hollenhurst, R. W.	Rochester
Hollands, W. H.	Fisher
Hollinshead, W. H.	St. Paul
Holm, H. H.	Glencoe
†Holm, P. F.	Wells
Holmberg, C. J.	Minneapolis
Holmberg, L. J.	Canby
Holmen, R. W.	St. Paul
Holmes, A. E.	Rush City
Holmes, C. L.	Rochester
Holmstrom, C. H.	Warren
Holt, G. W.	Wabasha
Holt, J. E.	St. Paul
Holt, R. P.	Rochester
Holtan, Theodore	Waterville
Holyoke, J. B.	Rochester
Holzapfel, F. C.	Minneapolis
Honke, R. W.	Proctor
Hopkins, G. W.	St. Paul
‡Hopping, R. A.	Rochester
Horan, M. J.	Rochester
Horton, B. T.	Rochester
Horns, Richard	Minneapolis
Hosfeld, S. Marjorie	Rochester
Hottinger, R. C.	Janesville
Houkom, Bjarne	Minneapolis
Houkom, S. S.	Duluth
House, Z. E.	Cass Lake
Houston, D. M.	Park Rapids
Hovde, Rolf	Winthrop
Hovland, M. L.	Minneapolis
Howard, M. I.	Mankato
Howard, M. A.	St. Paul

Howard, S. E.	Minneapolis
Howard, W. S.	St. Paul
Howe, R. F.	Rochester
Howell, L. P.	Rochester
Hoyer, L. J.	Windom
Hubbard, O. E.	Brainerd
Hubin, E. G.	Deerwood
Hudec, E. R.	Echo
Hudson, G. E.	Minneapolis
Huenekens, E. J.	Minneapolis
Huffington, H. L.	Mankato
‡Hughes, T. J.	Rochester
Hullsiek, H. E.	St. Paul
Hullsiek, R. B.	St. Paul
‡Hultgen, W. J.	St. Paul
Hultkrans, J. C.	Minneapolis
Hultkrans, R. E.	Minneapolis
Humphrey, E. W.	Moorhead
Humphrey, W. R.	Stillwater
Hunt, A. B.	Rochester
Hunt, R. C.	Fairmont
Hunt, R. S.	Fairmont
Hunte, A. F.	Alhambra, Calif.
‡Hunter, O. B.	Rochester
Hurd, Annah	Minneapolis
‡Hurley, J. P.	Rochester
Hurwitz, M. M.	St. Paul
Hitchins, S. P.	Rochester
‡Hutchinson, C. J.	Minneapolis
Hutchinson, D. W.	Oak Terrace
Hutchinson, Henry	Moose Lake
Huxley, F. R.	Faribault
Hymes, Charles	Minneapolis
Hynes, J. E.	Minneapolis

Iams, A. M.	Rochester
Ide, A. W.	St. Paul
Idstrom, L. G.	Ah-Gwah-Ching
Ikeda, Kano	St. Paul
Ingebrigtson, E. K. G.	Moorhead
Ingerson, C. A.	St. Paul
Irons, W. E.	Rochester
Irvine, H. G.	Minneapolis
‡Iverson, H. A.	Rochester
Iverson, R. M.	Minneapolis
Ivie, J. M.	Nashville, Tenn.

Jackman, R. J.	Rochester
†Jackson, C. M.	Minneapolis
Jackson, H. S.	Rochester
Jacobs, D. L.	Willmar
Jacobs, G. C.	Fergus Falls
Jacobs, J. C.	Willmar
Jacobson, Clarence	Chisholm
Jacobson, C. W.	Breckenridge
Jaeck, J. L.	Minneapolis
‡James, E. M.	Washington, D. C.
Jamieson, E. F.	Brainerd
Janes, J. M.	Rochester
Janssen, M. E.	St. Paul
Jarboe, J. P.	Rochester
Jennings, D. T.	Rochester
Jensen, A. M.	Brownton
Jensen, H. C.	Minneapolis
Jensen, M. J.	Minneapolis
Jensen, R. A.	Minneapolis
Jensen, T. J.	Duluth
Jesion, J. W.	St. Paul
Jeronimus, H. J.	Duluth
‡Jessico, C. M.	Duluth
Johanson, W. G.	St. Paul
Johnson, A. B.	Minneapolis
Johnson, A. E.	Minneapolis
Johnson, A. E.	Red.Wing
Johnson, A. M.	St. Paul
†Johnson, C. E.	Pine River
Johnson, C. E.	St. Paul
Johnson, C. M.	Dawson
Johnson, C. C.	Rochester
‡Johnson, C. R.	Rochester
‡Johnson, D. W.	Fairmont
Johnson, E. W.	Bemidji
Johnson, E. W.	Minneapolis
Johnson, E. V.	St. Louis Park
Johnson, H. C.	Thief River Falls
Johnson, Hans	Kerkhoven
Johnson, H. A.	Minneapolis
Johnson, H. C.	North Mankato
Johnson, H. E.	Bird Island
Johnson, J. A.	St. Paul
Johnson, J. A.	Minneapolis
Johnson, J. W.	St. Louis Park
Johnson, Julius	Minneapolis
Johnson, K. E.	Duluth
Johnson, M. R.	Minneapolis
†Johnson, N. A.	Santa Monica Calif.
Johnson, N. P.	Minneapolis
Johnson, N. T.	Minneapolis
Johnson, O. H.	Redwood Falls
Johnson, Olga H.	Moorhead
Johnson, O. V.	Fergus Falls
Johnson, P. C.	Tyler
‡Johnson, R. A.	Minneapolis
Johnson, R. B.	Lanesboro
Johnson, R. G.	Stillwater
Johnson, Reuben A.	Minneapolis
Johnson, R. E.	Crookston
Johnson, R. E.	Minneapolis
‡Johnson, R. H.	Rochester
Johnson, V. M.	Dawson
Johnson, W. E.	Morgan
Johnson, Y. T.	Minneapolis
Johnsrud, L. W.	Chisholm
Johnston, L. F.	Winona
Johnstone, W. W.	Thief River Falls
Jolin, F. M.	Bovey
‡Jolin, R. V.	Grand Rapids
Jones, A. W.	Red Wing
Jones, E. M.	St. Paul
Jones, H. W., Jr.	Minneapolis
Jones, O. H.	Mankato
Jones, R. N.	St. Cloud
Jones, W. R.	Minneapolis
†Jordan, Kathleen	Granite Falls
Jordan, L. S.	Granite Falls
Josewich, Alexander	Minneapolis
Josewski, R. J.	Stillwater
Joss, C. S.	Rochester
‡Joyce, G. L.	Rochester
Judd, D. B.	Rochester
‡Judd, E. S., Jr.	Rochester
Judd, W. H.	Washington, D. C.
Juergens, H. M.	Belle Plaine
‡Juers, E. H.	Red Wing
Jump, W. C.	Kasson
Jurdy, M. J.	Minneapolis
Just, H. J.	Hastings

Kaasa, L. J.	Albert Lea
Kabler, P. W.	Minneapolis
Kabrick, O. A.	Jackson
Kadish, A. H.	Rochester
Kaliher, Howard	Foley
Kalin, O. T.	Minneapolis
*Kalinoff, D.	Stillwater
‡Kallestad, L. L.	Hutchinson
Kamman, G. R.	St. Paul
Kamp, B. A.	Albert Lea
‡Kapernick, J. S.	Rochester
Kaplan, D. H.	St. Paul
Kaplan, J. J.	Rochester
‡Karleen, C. I.	Tracy
Karlstrom, A. E.	Minneapolis
Karn, B. R.	Ortonville
Karn, J. F.	Ortonville
Karon, I. M.	St. Paul
Kasper, E. M.	St. Paul
Kath, R. H.	Wood Lake
Katzovitz, Hyman	St. Paul
Kaufman, E. J.	Appleton
Kaufman, H. J.	Minneapolis
Kaufman, W. B.	Mankato
Kaufman, W. C.	Appleton
‡Kauvar, A. J.	Rochester
‡Kearney, R. W.	Mankato
Keating, F. R., Jr.	Rochester
Keefe, R. E.	St. Paul
Keeley, J. K.	Rochester
Keith, H. M.	Rochester
Keith, N. M.	Rochester
Keithahn, E. E.	Sleepy Eye
Kelby, G. M.	Minneapolis
‡Kelly, A. C.	Duluth
Kelly, J. V.	St. Paul
Kelly, P. H.	St. Paul
Kelsey, C. G.	Hinckley
Kelsey, C. M.	St. Paul
Kemp, A. F.	Mankato
Kemp. M. W.	Moose Lake
‡Kemper, C. M.	Rochester
Kendall, R. F.	St. Paul
Kenefick, E. V.	St. Paul
Kennedy, C. C.	Minneapolis
Kennedy, Jane F.	Minneapolis
Kennedy, R. L.	Eau Claire, Wis.
Kennedy, R. L. J.	Rochester
‡Kennedy, T. J.	Rochester
Kennedy, W. A.	St. Paul
‡Kenyon, T. J.	St. Paul
Kepler, E. J.	Rochester
Kerkhof, A. C.	Minneapolis
‡Kern, C. E.	Rochester
‡Kern, M. C.	Freeport
Kernohan, J. W.	Rochester
Kertesz, G.	Minneapolis
Kesting, Herman	St. Paul
Kettlewell, R. B.	Sauk Centre
Keyes, J. D.	Winona
Kierland, P. E.	Alexandria
Kierland, R. R.	Rochester
Kiernan, P. C.	Rochester
Kilbride, E. A.	Worthington
Killins, J. A.	Rochester
Kimmel, G. C., Jr.	Red Wing
†King, E. A.	Hennepin
King, F. W.	Oak Terrace
King, G. L.	St. Paul
Kingsbury, E. M.	Moose Lake
‡Kingston, J. R.	Bemidji
Kinsella, T. J.	Minneapolis
Kirby, J. L.	Rochester
Kirk, G. P.	East Grand Forks
‡Kirkland, W. G.	Rochester
Kirklin, B. R.	Rochester
Kirklin, O. L.	Rochester
Kistler, A. J.	Minneapolis
†Kistler, C. M.	Minneapolis
Kleifgen, G. V. H.	Rochester
Klein, A. D.	Chisholm
Klein, Harry	Duluth
Klein, H. N.	St. Paul
Klein, J. C.	Shakopee
Klima, W. W.	Stewart
‡Klinkenberg, R. V.	Rochester
‡Klontz, C. E., Jr.	Rochester
‡Kloos, E. K.	Rochester
Knapp, F. N.	Duluth
Knapp, M. E.	Minneapolis
Knauff, M. K.	St. Paul
Knight, R. R.	Minneapolis
Knight, R. T.	Minneapolis
Knights, J. A.	Bemidji
Knisely, R. M.	Rochester
Knoll, W. V.	Duluth
Knutson, G. A.	Hallock
‡Knutson, G. E.	St. Paul
‡Knutson, J. R. B.	Rochester
Knutson, L. A.	Spring Grove
Koelsche, G. A.	Rochester
Koepcke, G. M.	Minneapolis
Koepsell, A. A. H.	St. Paul
Kohlbry, C. O.	Duluth
Kohler, D. W.	St. Joseph
Kolars, J. J.	Faribault
Koller, H. M.	Minneapolis
Koller, L. R.	Minneapolis
Koop, S. H.	Richmond
Korchik, J. P.	Minneapolis
Kortsch, F. P.	Prior Lake
Koskela, L. E.	Sebeka
Kostick, W. R.	Fertile
Kotchevar, F. R.	Eveleth
Koucky, R. W.	Minneapolis
‡Kozberg, Oscar	Moose Lake
Krause, C. W.	Fairmont
Kreilkamp, B. L.	Rochester
Kreuzer, T. C.	Marshall
Krieser, A. E.	Boyd
Krueger, V. R.	Nopeming
Krusen, F. H.	Rochester
Kucera, F. J.	Minneapolis
‡Kucera, L. J.	Lonsdale
Kucera, S. T.	Lonsdale
Kucera, W. J.	Minneapolis
Kugler, A. A.	St. Paul
Kurtin, H. J.	Blooming Prairie
Kurzweg, F. T.	Rochester
Kuske, A. W.	St. Paul
Kusske, A. L.	New Ulm
Kvale, W. F.	Rochester
Kvitrud, Gilbert	St. Paul

‡LaBree, R. H.	Duluth
‡Lagaard, S. M.	Minneapolis
Laird, A. T.	Duluth
Lajoie, J. M.	Minneapolis
Lake, C. F.	Rochester
Lander, H. H.	Rochester
Lang, L. A.	Minneapolis
*Langenderfer, F. V.	St. Paul
Langhoff, A. H.	St. Peter
Lannin, B. G.	St. Paul
Lannin, J. C.	Mabel
Lapierre, A. P.	Minneapolis
Lapierre, J. T.	Minneapolis
Large, H. R.	Rochester
Larrabee, W. F., Jr.	Rochester
Larsen, C. L.	St. Paul
Larsen, F. W.	Minneapolis
Larson, Arnold	Detroit Lakes
Larson, C. M.	Minneapolis
Larson, Eva-Jane	St. Paul
Larson, J. T.	St. Paul
Larson, L. M.	Minneapolis
Larson, Leonard M.	Oak Terrace
Larson, L. J.	Bagley
‡Larson, M. H.	Nicollet
Larson, P. N.	Minneapolis
Larson, R. H.	Cannon Falls
Larson, R. A.	Rochester
‡Latchem, C. W.	Rochester
Latterell, K. E.	Rochester
Lauer, D. J.	St. Paul
Laughlin, J. T.	Grey Eagle
La Vake, R. T.	Minneapolis
Lax, M. H.	St. Paul
Laymon, C. W.	Minneapolis
Lazar, H. L.	Pasadena, Calif.
Leahy, Bartholomew	St. Paul
Leary, W. V.	Owatonna
Leavenworth, R. O.	St. Paul
†Leavitt, H. H.	Minneapolis
Leavitt, M. D.	Rochester
Lebowske, J. A.	Minneapolis
‡Leck, P. C.	Austin
Leddy, E. T.	Rochester
Lee, H. M.	Minneapolis

Lee, H. W.	Brainerd
Lee, W. N.	Madison
Leemhuis, G. H.	Aitkin
Lenhoff, H. J., Jr.	Omaha, Nebr.
Leibold, H. H.	Parkers Prairie
Leick, R. M.	St. Paul
Leighton, R. S.	Evansville
Leitch, Archibald	St. Paul
Leitschuh, L. F.	Sleepy Eye
Leland, H. R.	Minneapolis
‡Lemon, W. E.	Rochester
Lemon, W. S.	Rochester
Lenander, M. E. L.	St. Peter
Lenarz, A. J.	Browerville
Lende, Norman	Faribault
Lenont, C. B.	Virginia
Lenz, J. R.	Morton
Lenz, O. A.	Minneapolis
Leonard, L. J.	Minneapolis
Leonard, Samuel	Minneapolis
Leopard, B. A.	Albert Lea
Lepak, F. J.	Duluth
Lepak, J. A.	St. Paul
†Lerche, William	Cable, Wis.
Leven, N. L.	St. Paul
Leverenz, C. W.	St. Paul
Levin, Bert	St. Paul
‡Levin, Louis	Rochester
‡Levinson, J. P.	Rochester
Leavitt, G. X.	St. Paul
Levy, M. S.	Rochester
Lewis, A. J.	Henning
Lewis, C. B.	St. Cloud
Lexa, F. J.	Lonsdale
Libert, J. N.	St. Cloud
Lick, C. L.	St. Paul
Liedloff, A. G.	Mankato
‡Lien, R. J.	Rochester
Liffrig, W. W.	Red Wing
Lightbourn, E. L.	St. Paul
Lightfoot, Grace K.	Rochester
Lilleberg, N. J.	St. Paul
Lillehei, E. J.	Robbinsdale
Lillie, H. I.	Rochester
Lillie, J. C.	Rochester
Lima, L. R.	Montevideo
Lima, L. R., Jr.	Montevideo
Lind, C. J.	Minneapolis
‡Lind, C. J., Jr.	Minneapolis
‡Lindahl, W. W.	Rochester
Lindberg, A. L.	Wheaton
Lindberg, A. C.	Minneapolis
Lindberg, D. O. N.	Wabasha
Lindberg, V. L.	Minneapolis
Linde, Herman	Cyrus
‡Lindgren, R. C.	Minneapolis
Lindley, S. B.	Willmar
Lindquist, R. H.	Minneapolis
Linner, H. P.	Minneapolis
Lippman, E. S.	Minneapolis
Lippman, H. S.	St. Paul
Lippmann, E. W.	Hutchinson
‡Lipschultz, Oscar	Minneapolis
Lipscomb, P. R.	Rochester
Litchfield, J. T.	Minneapolis
Litman, A. B.	Minneapolis
Litman, S. N.	Duluth
Little, A. G., Jr.	Valdosta, Ga.
†Little, W. J.	St. Paul
Litzenberg, J. C.	Minneapolis
Lobitz, W. C., Jr.	Rochester
†Lochead, D. C.	Rochester
‡Lofgren, K. A.	Rochester
Lofsness, S. V.	Minneapolis
Logan, A. H.	Rochester
Logan, G. B.	Rochester
Logefeil, R. C.	Minneapolis
Lohmann, J. G.	Pipestone
Loken, Theodore	Ada
Loken, S. M.	St. Paul
Lombardi, A. A.	Rochester
Lommen, P. A.	Austin
*Long, Jesse	Minneapolis
Long, Mary	Rochester
Loofbourrow, E. H.	Keewatin
Loomis, E. A.	Minneapolis
Loomis, G. L.	Winona
Love, F. A.	Carlos
Love, J. G.	Rochester
Lovelace, W. R.	Rochester
Lovelady, S. B.	Rochester
‡Lovering, Joseph	Rochester
Lovett, Bernice R.	Oak Terrace
‡Lovshin, L. L.	Rochester
Lowe, E. R.	So. St. Paul
Lowe, G. H.	Rochester
Lowe, T. A.	So. St. Paul
Lowry, Elizabeth C.	Minneapolis
Lowry, Thomas	Minneapolis
Luck, Hilda	Mankato
‡Luckey, C. A.	Rochester
Luckemeyer, C. J.	St. Cloud
Ludden, T. E.	Rochester
‡Lueck, A. G.	Rochester
‡Lufkin, C. D.	Northfield
Lufkin, N. H.	Minneapolis
Lund, C. J. T.	Fergus Falls
Lund, C. J.	Minneapolis
Lund, W. J.	Staples
Lundberg, R. I.	Minneapolis
Lundblad, R. A.	Minneapolis
Lundblad, S. W.	Minneapolis
Lundgren, A. C.	Minneapolis
Lundholm, A. M.	St. Paul
‡Lundquist, C. W.	Winona
Lundquist, E. F.	Minneapolis
Lundy, J. S.	Rochester
Lynch, F. W.	St. Paul
Lynch, J. L.	Rochester
Lynch, M. J.	Minneapolis
‡Lynch, R. C.	Rochester
Lynde, O. G.	Thief River Falls
Lysne, Henry	Minneapolis
Lysne, Myron	Minneapolis
Macbeth, J. L.	St. Clair
‡MacCarty, C. S.	Rochester
†MacCarty, W. C.	Rochester
MacDonald, A. E.	Minneapolis
MacDonald, D. A.	Minneapolis
Macdonald, I. D.	Rochester
‡Macey, H. B.	Rochester
MacFarlane, P. H.	Chisholm
Mach, F. B.	Minneapolis
‡Mack, J. J.	St. Louis, Mo.
‡MacKay, H. J.	Rochester
MacKinnon, D. C.	Minneapolis
Macklin, W. E., Jr.	Litchfield
MacLean, A. R.	Rochester
MacMillan, D. G.	Minneapolis
Macnie, J. S.	Minneapolis
MacRae, G. C.	Duluth
Macy, Dorothy	Rochester
Madden, J. F.	St. Paul
‡Madland, R. S.	Fairfax
Maeder, E. C.	Minneapolis
Maertz, W. F.	St. Paul
Magath, T. B.	Rochester
Magney, F. H.	Duluth
Magnuson, A. E.	Wheaton
Magraw, R. M.	Two Harbors
Mahle, D. G.	Plainview
Mahowald, A.	Albany
Maitland, E. T.	Jackson
Maland, C. O.	Minneapolis
Malerich, J. A.	St. Paul
Malmstrom, J. A.	Virginia
Manley, J. R.	Duluth
†Mann, F. C.	Rochester
Manning, J. J.	Rochester
†Manson, F. M.	Worthington
†Marcley, W. J.	Minneapolis
‡Margulies, Harold	Rochester
Mariette, E. S.	Oak Terrace
Mark, D. B.	Minneapolis
Mark, Hilbert	Minneapolis
Marking, G. H.	Minneapolis
Marks, R. W.	St. Paul
‡Marr, G. E.	Rochester
Marshall, Helen S.	Duluth
Martens, T. A.	Rochester
Martin, D. L.	Rochester
Martin, T. P.	Arlington
Martin, W. C.	Duluth
Martineau, J. L.	St. Paul
Martinson, C. J.	Wayzata
‡Martinson, E. J.	Wayzata
Marvin, C. P.	Rochester
Mason, J. A.	International Falls
Masson, D. M.	Rochester
Masson, J. C.	Rochester
†Matchan, G. R.	Minneapolis
Matthews, Justus	Minneapolis
Mattill, P. M.	Oak Terrace
Mattison, R. E.	Billings, Mont.
‡Mattison, P. A.	Winona
Mattson, A. D.	Minneapolis
Mattson, H. A. N.	Minneapolis
Maxeiner, S. R.	Minneapolis
Mayfield, L. H.	Rochester
Maynard, M. S.	Rochester
Mayne, R. M.	Duluth
Mayo, C. W.	Rochester
Maytum, C. K.	Rochester
McAdams, J. B.	St. Paul
McCaffrey, F. J.	Minneapolis
McCain, D. L.	St. Paul
‡McCall, C. H.	Rochester
‡McCallig, J. J.	Rochester
McCann, D. F.	Bemidji
McCarten, F. M.	Stillwater
McCarthy, Donald	Minneapolis
McCarthy, J. J.	St. Paul
McCarthy, W. R.	St. Paul
McCartney, J. S.	Minneapolis
McCarty, P. D.	Ely
McClanahan, J. H.	White Bear
McClanahan, T. S.	White Bear
‡McClellan, J. T.	Rochester
‡McCloud, C. N.	Rochester
†McCoy, Mary K.	Duluth
‡McCrimmon, H. P.	Minneapolis
McCuistion, C. H., Jr.	Rochester
McDaniel, Orianna	Minneapolis
McDonald, A. L.	Duluth
McDonald, J. R.	Rochester
McDowell, J. P.	St. Cloud
‡McEachern, C. G.	Rochester
‡McElligott, E. W.	Breckenridge
McEnaney, C. T.	Owatonna
McEwan, Alexander	St. Paul
McFarland, A. H.	Minneapolis
McGandy, R. F.	Minneapolis
McGeary, G. E.	Minneapolis
McGroarty, J. J.	Easton
McGuff, P. E.	Rochester
McGuigan, H. T.	Red Wing
McHaffie, O. L.	Duluth
McInerny, M. W.	Minneapolis
McIntire, H. M.	Waseca
McIntyre, J. A.	Owatonna
McIver, B. A.	Lowry
McKaig, C. B.	Pine Island
McKelvey, J. L.	Minneapolis
McKenna, J. K.	Austin
McKenna, M. J.	Grand Rapids
McKenzie, C. H.	Minneapolis
McKeon, J. O.	Montgomery
‡McKibbin, J. P.	Rochester
McKinlay, C. A.	Minneapolis
McKinley, J. C.	Minneapolis
McKinney, F. S.	Minneapolis
McLaren, Jennette M.	Minneapolis
McLaughlin, E. M.	Winona
McLeod, J. L.	Grand Rapids
McMahon, M. J.	Green Isle
McMurtrie, W. B.	Minneapolis
McNairy, D. J.	Rochester
NcNutt, J. R.	Duluth
McPheeters, H. O.	Minneapolis
McQuarrie, H. B.	Rochester
†McQuarrie, Irvine	Minneapolis
McVicker, J. H.	Rochester
Mead, C. H.	Duluth
Meade, J. R.	St. Paul
Meadows, J. A., Jr.	Rochester
‡Mears, B. J.	St. Paul
Mears, R. F.	Northfield
Medelman, J. P.	St. Paul
Meinert, A. E.	Winona
Melby, Benedik	Blooming Prairie
Mellby, O. F.	Thief River Falls
Meller, R. L.	Minneapolis
Melzer, G. R.	Lyle
Mercil, W. F.	Crookston
Merkert, C. E.	Minneapolis
Merkert, G. L.	Minneapolis
†Merrick, Charlotte T.	Minneapolis
†Merrill, Elisabeth	Minneapolis
‡Merrill, R. W.	Morris
Merriman, L. L.	Duluth
‡Merritt, W. A.	Rochester
Mesker, G. H.	Cambridge
‡Messler, J. D.	Rochester
Meyer, A. A.	Melrose
Meyer, A. C.	Rochester
Meyer, A. J.	Minneapolis
Meyer, E. L.	Minneapolis
Meyer, F. C.	Kenyon
Meyer, J. O.	Grand Rapids
Meyer, P. F.	Faribault
Meyer, W. M.	Rochester
Meyerding, E. A.	St. Paul
Meyerding, H. W.	Rochester
‡Meyers, W. C.	Rochester
Mezen, J. F.	Rochester
Michael, J. C.	Minneapolis
Michel, H. H.	Minneapolis
Michelson, H. E.	Minneapolis
Mickelson, J. C.	Mankato
‡Millen, F. J.	Rochester
Miller, E. W.	Anoka
‡Miller, H. E.	Minneapolis
Miller, Hugo E.	Minneapolis
‡Miller, J. R., Jr.	Rochester
Miller, J. C.	Minneapolis
‡Miller, R. C.	Rochester
‡Miller, Sidney	Rochester
Miller, V. I.	Mankato
Miller, W. A.	New York Mills
Mills, J. L.	Winnebago
Milton, J. S.	Minneapolis
Minckler, J. E.	Duluth
Miners, G. A.	Deer River
Minge, R. K.	Clarkfield
‡Minsky, A. A.	Minneapolis
Minty, E. W.	Duluth
Mitby, I. L.	Aitkin
Mitchell, B. D.	Minneapolis
Mitchell, E. C.	Minneapolis
Mitchell, M. E.	Minneapolis
Mitchell, M. T.	Minneapolis
Moberg, C. W.	Detroit Lakes
Moe, A. E.	Rochester
Moe, J. H.	Minneapolis
Moe, R. J.	Duluth
Moe, Thomas	Moose Lake
Moen, J. K., Jr.	Minneapolis

Moersch, F. P..............Rochester
Moersch, H. J..............Rochester
Moga, J. A..............St. Paul
Moir, W. W..............Stillwater
Molander, H. A..............St. Paul
‡Mollers, T. P..........Mountain Iron
Monahan, E. S..........Minneapolis
Monroe, P. B..............Cloquet
Monserud, N. O..............Cloquet
Monson, E. M..........Minneapolis
‡Monson, L. J..............Canby
Montgomery, G. E..........Rochester
Montgomery, Hamilton......Rochester
Mooney, L. P..............Graceville
‡Moos, D. J..............Minneapolis
Moquin, Marie A..........St. Paul
More, C. W..............Eveleth
Morehead, D. E..........Owatonna
Moren, Edward..........Minneapolis
Moren, L. A..........Elko, Nevada
Morgan, H. O..............Amboy
Morgan, J. L..............Rochester
Moriarty, Berenice..........St. Paul
Moriarty, Cecile R..........St. Paul
Mork, A. H..............Anoka
Mork, B. O., Jr..........Worthington
Mork, B. O., Sr..........Worthington
Mork, F. E..............Anoka
Morley, G. A..............Crookston
Morlock, C. G..............Rochester
Morrison, A. W..........Minneapolis
Morrison, Charlotte J......Minneapolis
Morrow, J. R..............Rochester
Morse, M. P..............Le Roy
Morse, R. W..........Minneapolis
Morseman, L. W..............Hibbing
Mortensbak, H. E. Great Falls, Mont.
Morton, R. J..............Rochester
Mosby, M. E..........Long Prairie
Moses, Joseph, Jr..........Northfield
Moses, R. R..............Kenyon
Mouritsen, G. J..........Fergus Falls
Mousel, L. H..............Rochester
Mueller, R. F..........Two Harbors
Mueller, Selma C..............Duluth
Muir, W. F..............Graceville
Muller, R. T..............St. Paul
‡Mulligan, A. M..............Brainerd
Mulmed, E. I..............Rochester
Multhauf, C. J..............Rochester
Murphy, E. P..........Minneapolis
Murphy, I. J..........Minneapolis
Murphy, J. E..............Marshall
‡Murphy, J. T..............Rochester
‡Murphy, M. E..............Rochester
Murray, R. A..............Coleraine
‡Murray, R. A..............Rochester
‡Musachio, N. F..............Foley
Musgrove, J. E..............Rochester
Mussey, Mary E..............Rochester
Mussey, R. D..............Rochester
‡Mussey, Robert D., Jr.......Rochester
Musty, N. J..........Minneapolis
Myers, J. A..........Minneapolis
Myers, T. T..............Rochester
Myre, C. R..............Paynesville

‡Naegeli, A. E..............St. Paul
Naegeli, Frank..........Fergus Falls
Nagel, H. D..............Waconia
Nash, L. A..............St. Paul
Naslund, A. W..........Minneapolis
Nauth, B. S..............Winona
‡Nay, R. M..............Rochester
Neal, J. M..........Minneapolis
‡Neale, R. M..............Rochester
Nealy, D. E..............Adrian
Neary, R. P..........Minneapolis
Neel, H. B..............Albert Lea
Neff, W. S..............Virginia
Nehring, J. P..............Preston
Neibling, H. A..............Rochester
Nelson, B. G..........Minneapolis
Nelson, B. A..............Bigfork
Nelson, C. E. J..........Albert Lea
Nelson, E. H..............Chisholm
Nelson, E. J..............Owatonna
Nelson, E. N..........Minneapolis
†Nelson, H. S......Los Angeles, Calif.
‡Nelson, K. L..........Montgomery
Nelson, L. A..............St. Paul
‡Nelson, L. S..............Hibbing
Nelson, M. C..........Minneapolis
Nelson, M. S..........Granite Falls
Nelson, N. H..........Minneapolis
Nelson, N. P..............Brainerd
Nelson, O. L. N..........Minneapolis
‡Nelson, R. A..........Fergus Falls
Nelson, R. L..............Duluth
‡Nelson, W. I..........Minneapolis
Nelson, W. O. B..........Fergus Falls
‡Nesheim, M. O..............Emmons
Nessa, C. B..............St. Cloud
Nesset, L. B..............Marshall
‡Nester, H. D..............Rochester
Neumaier, Arthur..............Glencoe

Neumann, C. A..............Winona
New, G. B..............Rochester
‡Newell, F. W..............St. Paul
*Newhart, Horace..........Minneapolis
Nichols, A. E..............St. Paul
Nichols, D. R..............Rochester
Nicholson, M. A..............Duluth
‡Nickel, W. R..............Rochester
Nickell, D. F..............Rochester
Nickeson, R. W..............Rochester
Nielson, A. M..............Northfield
Nielsen, W. L..............Rochester
Nietfeld, A. B..............Warren
Nilson, H. J..........North Mankato
Ninneman, N. N..............Waconia
Nissen, A. S..............St. Peter
Noble, J. F..............St. Paul
Noble, J. L..............St. Paul
Nolan, D. E..........Dayton, Ohio
Noonan, W. J..........Minneapolis
Noran, H. H..........Minneapolis
Norberg, C. E..............Cloquet
Nord, R. E..........Minneapolis
Nordin, G. T..........Minneapolis
Nordland, M. A..............Rochester
Nordland, Martin..........Minneapolis
Norley, Theodore..........Rochester
Nordman, W. F..............Mora
Norman, J. F..............Crookston
Norris, N. T..............Caledonia
Noth, H. W..........Minneapolis
Notier, V. A..............Rochester
Novak, E. E..........New Prague
Norval, M. A..............Rochester
Nuebel, C. J..............St. Paul
Nuessle, W. G..............Springfield
Nuetzman, A. W..............Faribault
Nutting, R. E..............Duluth
Nydahl, M. J..........Minneapolis
Nye, Katherine A..........St. Paul
Nye, Lillian L.......Columbus, Miss.
Nygren, W. T..............Braham
Nylander, E. G..........Minneapolis
Nystrom, Ruth G..........Minneapolis

Oberg, C. M..........Minneapolis
O'Brien, J. P..............Rochester
†O'Brien, W. A..........Minneapolis
O'Brien, W. M..............St. Paul
Ochsner, C. G..............Wabasha
O'Connor, D. C..........Eden Valley
O'Connor, L. J..............St. Paul
‡Odel, H. M..............Rochester
O'Donnell, D. M..............Ortonville
O'Donnell, J. E..........Minneapolis
Oeljen, S. C. G..............Waseca
Oerting, Harry..............St. Paul
Ogden, Warner..............St. Paul
Ohage, Justus, Jr..........St. Paul
O'Hanlon, J. A..............Lindstrom
O'Kane, T. W..............St. Paul
Olds, G. H..........New Richland
O'Leary, J. H..........Minneapolis
O'Leary, P. A..............Rochester
Oliver, J. L..............Graceville
Oliver, James..............Moorhead
Olmanson, E. G..............St. Peter
Olsen, A. M..............Rochester
‡Olsen, E. G..........Minneapolis
Olsen, R. L..............St. Paul
Olsen, Gertrude E..........Georgetown
Olson, A. C..........Minneapolis
Olson, A. E..............Duluth
Olson, A. O..............Duluth
Olson, C. A..............St. Paul
Olson, C. J..........Belle Plaine
Olson, D. O. C..............Gaylord
Olson, E. A..........Pine Island
Olson, G. E..........West Concord
‡Olson, J. D..............Rochester
‡Olson, L. M..........Chisago City
Olson, O. A..........Minneapolis
†Olson, R. G..........Minneapolis
Olson, S. W..............Rochester
Onsgard, L. K..............Houston
Oppegaard, C. L..............Crookston
Oppegaard, M. O..............Crookston
Oppen, E. G..........Minneapolis
O'Reilley, B. E..............St. Paul
Osborn, J. E..............Rochester
Ostergaard, Erling......Fergus Falls
Ostergren, E. W..............St. Paul
Otto, H. C..............Frazee
Ouellette, A. J..............St. Paul
‡Owens, A. H., Jr..........Minneapolis
Owens, W. A..............Montevideo
†Owre, Oscar..........Minneapolis

‡Padgett, H. O..............Rochester
Page, R. L..............St. Charles
Paine, J. R..........Minneapolis
Palen, B. J..........Minneapolis
Palmer, C. F..............Albert Lea
Palmer, H. A..............Blackduck
Palmer, J. K..............Rochester
Palmer, W. L..............Albert Lea

‡Palmerton, E. S..........Albert Lea
Pankratz, P. J........Mountain Lake
†Parker, O. W..............Duluth
Parker, R. L..............Rochester
‡Parker, W. H..............Chisholm
Parkhill, Edith M..........Rochester
Parson, E. I..............Duluth
Parson, Lillian B.........Elbow Lake
Parson, L. R..........Elbow Lake
Parsons, J. G..............Crookston
Parsons, R. L..............Monterey
Pasek, A. W..............Cloquet
Passer, A. A..............Olivia
‡Patch, O. B..............Duluth
Patterson, H. D..............Anoka
Patterson, R. B..............Marshall
‡Patterson, S. A..............Duluth
Patterson, W. E..........Minneapolis
Patterson, W. L........Fergus Falls
‡Pattison, D. H..............Rochester
Paulson, E. C..........Elbow Lake
‡Paulson, D. L..............Rochester
Paulson, J. A..............Rochester
Paulson, T. S..........Fergus Falls
Payne, J. H..............Rochester
Pearsall, R. P..............Virginia
Pearson, B. F..............Shakopee
Pearson, C. C..............Rochester
‡Pearson, D. J..............Rochester
Pearson, F. R..............St. Paul
Pearson, L. O..............Warroad
Pearson, M. M..............St. Paul
Pease, G. L..............Rochester
Peck, L. D..............Hastings
Peck, L. R..............Hastings
Pedersen, A. H..............St. Paul
Pedersen, R. C..............Duluth
Pemberton, J. deJ..........Rochester
Pender, J. W..............Rochester
Penhall, F. W..............Willmar
Penk, E. L..............Springfield
Penn, G. E..............Mankato
Pennie, D. F..............Duluth
Pennington, R. E..........Rochester
Peppard, T. A..........Minneapolis
‡Perkins, R. F..............Rochester
Perlman, E. C..........Minneapolis
Perry, C. G..............St. Paul
‡Perry, T. T..............Rochester
Person, J. P..............Alden
Pertl, A. L..............Canby
‡Peters, G. A..............Rochester
‡Petersen, G. L..........Minneapolis
Petersen, J. R..........Minneapolis
Petersen, M. C..............Rochester
Petersen, P. C..............Braham
Petersen, R. T..........Minneapolis
Peterson, C. A..........Chisago City
‡Peterson, D. B..............St. Paul
Peterson, E. N..............Virginia
Peterson, H. O..............St. Paul
‡Peterson, H. W..........Minneapolis
‡Peterson, J. L. E..........St. Paul
Peterson, J. H..........Minneapolis
Peterson, K. H..........Hutchinson
Peterson, N. P..........Minneapolis
Peterson, O. L..............Cokato
Peterson, O. H..........Minneapolis
Peterson, P. E..........Minneapolis
Peterson, R. A..............Vesta
*Peterson, V. N..............St. Paul
Peterson, W. C..........Minneapolis
Peterson, W. G..........Minneapolis
Peterson, W. Henry......Minneapolis
‡Petit, J. V..........Minneapolis
Petit, L. J..........Minneapolis
Petkevich, F. M...Silver Springs, Md.
Pewters, J. T..........Minneapolis
Peyton, W. T..........Minneapolis
Pfuetze, K. H..........Cannon Falls
Pfunder, M. C..........Minneapolis
‡Phalen, G. S..............Rochester
Phelps, K. A..........Minneapolis
Phillips, S. K..............Rochester
*Phillips, W. H..............Jordan
Pierce, C. H..............Wadena
Pierson, R. F..............Slayton
Piper, M. C..............Rochester
Piper, W. A..........Mountain Lake
Platou, E. S..........Minneapolis
Plimpton, N. C., Jr.......Minneapolis
Plondke, F. J..............St. Paul
Plummer, W. A..............Rochester
Pogue, R. E..............Watertown
Pohl, J. F. M..........Minneapolis
Poirier, J. A..........Forest Lake
Poirier, R. A..............Rochester
Pollard, D. W..........Minneapolis
Polley, H. F..............Rochester
Pollock, D. K..........Minneapolis
Pollock, L. W..............Rochester
‡Polmeteer, F. E..............Rochester
Polzak, J. A..........Minneapolis
‡Ponterio, J. E..............Shakopee
Pool, T. L..............Rochester
‡Poore, J. C..............Isle

Popp, W. C.	Rochester
Poppe, F. H.	Minneapolis
Porter, O. M.	Willmar
Potek, David	International Falls
Potter, R. B.	Minneapolis
Potthoff, C. J.	Washington, D. C.
Power, J. E.	Duluth
Powers, F. H.	Rochester
Prangen, A. D.	Rochester
Pratt, F. J.	Minneapolis
Pratt, J. H., Jr.	Rochester
Preine, I. A.	Minneapolis
Preisinger, J. W.	Renville
Prendergast, H. J.	St. Paul
Preston, F. W.	Rochester
‡Preston, L. F.	Rochester
Preston, P. J.	Minneapolis
Prickman, L. E.	Rochester
Priest, R. E.	Minneapolis
Priestly, J. T.	Rochester
Prim, J. A.	Minneapolis
Prins, L. R.	Albert Lea
Proeschel, R. K.	Willmar
Proffitt, W. E.	Minneapolis
‡Proudfit, C. H.	Rochester
Pruitt, R. D.	Rochester
Pugh, D. G.	Rochester
Pugh, P. F. H.	Rochester
Purves, G. H.	Hendricks
Puumala, R. H.	Cloquet
Pyle, Marjorie M.	Rochester
Quanstrom, V. E.	Brainerd
‡Quattlebaum, Frank	Rochester
Quello, R. O. B.	Minneapolis
†Quinby, T. F.	Minneapolis
Quist, H. W.	Minneapolis
‡Quist, H. W., Jr.	Minneapolis
Raadquist, C. S.	Hibbing
Radabaugh, R. C.	Hastings
‡Radcliffe, James, Jr.	Rochester
Raetz, S. J.	Maple Lake
Raihala, John	Virginia
Raiter, R. F.	Cloquet
Ramsay, R. M.	St. Paul
†Ramsey, W. R.	St. Paul
Randall, A. M.	Ashby
Randall, L. M.	Rochester
Ransom, H. R.	Crosby
Ransom, M. L.	Hancock
Rasmussen, R. C.	St. Paul
‡Rasmussen, W. C.	Rochester
‡Raszkowski, H. J.	Rochester
†Ratcliffe, J. J.	Aitkin
Rea, C. E.	St. Paul
Reeve, E. T.	Elbow Lake
Reff, A. R.	Crookston
Regan, J. M.	Wauwatosa, Wis.
Regnier, E. A.	Minneapolis
Reid, L. M.	Excelsior
Reif, H. A.	Minneapolis
Reif, H. J.	St. Paul
†Reineke, G. F.	New Ulm
†Reiter, H. W.	Shakopee
Remington, J. H.	Rochester
Rempel, D. D.	Lester Prairie
Replogle, W. H.	Wabasha
‡Rewbridge, A. G.	Minneapolis
Reynolds, J. S.	Minneapolis
Rice, C. O.	Minneapolis
Rice, H. G.	Moorhead
Rice, H. R.	Moscow, Idaho
Richards, E. T. F.	St. Paul
Richards, W. B.	St. Cloud
‡Richardson, F. S.	Minneapolis
Richardson, H. E.	St. Paul
Richardson, R. J.	St. Paul
Richdorf, L. F.	Minneapolis
Rick, P. F. W.	St. Paul
Ridgway, A. M.	Annandale
Rieke, W. W.	Wayzata
Rigler, L. G.	Minneapolis
*Rimer, E. W.	Breckenridge
‡Rinehart, R. E.	Rochester
Ringle, O. F.	Walker
‡Rinkey, Eugene	Redwood Falls
Riordan, Elsie M.	Minneapolis
Ripple, R. J.	New London
Risch, R. E.	Minneapolis
Risser, A. F.	Stewartville
Ritchie, W. P.	St. Paul
Ritt, A. E.	St. Paul
Rivers, A. B.	Rochester
Rizer, D. K.	Minneapolis
Rizer, R. I.	Minneapolis
Roan, C. M.	Minneapolis
Roan, O. M.	Minneapolis
Robb, E. F.	Minneapolis
Robbins, C. P.	Winona
Robbins, O. F.	Minneapolis
Roberts, L. J.	Minneapolis
Roberts, O. W.	Owatonna
Roberts, S. W.	Minneapolis
*Roberts, T. S.	Minneapolis
Roberts, W. B.	Minneapolis
Robertson, H. E.	Rochester
†Robertson, J. B.	Minneapolis
Robertson, P. A.	Austin
Robilliard, C. M.	Faribault
Robinson, F. J.	Madison, Wis.
†Robinson, J. M.	Goshen, N. Y.
Robitshek, E. C.	Minneapolis
Robson, J. T.	Rochester
*Rochford, W. E.	Minneapolis
Rodda, F. C.	Minneapolis
Roehlke, A. B.	Elk River
Roemer, H. J.	Winona
Rogers, C. W.	Minneapolis
‡Rogers, J. D.	Rochester
Rogers, S. F.	St. Paul
Rogne, W. G.	Spring Grove
Roholt, C. L.	Waverly
Rohrer, C. A.	Waterville
Rokala, H. E.	Virginia
Rolig, D. H.	St. Paul
Rood, D. C.	Duluth
Rose, J. T.	Lakefield
Rosenbaum, E. E.	Rochester
Rosenbladt, Louis	St. Paul
Rosendahl, F. G.	St. Paul
Rosenfield, A. B.	Hibbing
Rosenholtz, Burton	St. Paul
Rosenow, E. C.	Cincinnati, Ohio
‡Rosenow, J. H.	Rochester
Rosenthal, F. H.	Grand Meadow
Rosenthal, Robert	St. Paul
Rosenwald, R. M.	Minneapolis
Roskilly, G. C. P.	Minneapolis
Ross, A. J.	Minneapolis
‡Rossen, R. X.	Hastings
‡Roth, F. D.	Lewiston
Roth, G. C.	St. Paul
Rothschild, H. J.	St. Paul
Roust, H. A.	Montevideo
Rousuck, A. A.	Cleveland Heights, Ohio
Rovelstad, R. A.	Rochester
Rowe, O. W.	Duluth
Rowe, W. H.	Fairmont
‡Rowland, W. D.	Rochester
Rowles, E. K.	Coleraine
Roy, P. C.	St. Paul
Rucker, C. W.	Rochester
Rucker, W. H.	Minneapolis
Rud, N. E.	Minneapolis
Rudell, G. L.	Minneapolis
Rudie, P. S.	Duluth
Ruggles, G. M.	Forest Lake
Ruhberg, G. N.	St. Paul
Rulison, E. T., Jr.	Rochester
Rumpf, C. W.	Faribault
†Rumpf, W. H.	Faribault
‡Rushton, J. G.	Rochester
Russ, F. H.	Rochester
Russ, H. H.	Blue Earth
Russeth, A. N.	Minneapolis
Rusten, E. M.	Minneapolis
Rutherford, W. C.	St. Paul
Rutledge, L. H.	Detroit Lakes
Ryan, J. D.	Milaca
Ryan, J. J.	St. Paul
‡Ryan, J. M.	St. Paul
Ryan, M. E.	St. Paul
Ryan, R. E.	Rochester
Ryan, W. J.	Duluth
Rydburg, W. C.	Brooten
Ryding, V. T.	Howard Lake
Rynearson, E. H.	Rochester
Sach-Rowitz, Alvan	Moose Lake
‡Sadler, W. P., Jr.	Minneapolis
Saffert C. A.	New Ulm
Sahr, W. G. C.	Hutchinson
‡St. Cyr, K. J.	Osseo
Saliterman, B. I.	Minneapolis
Salt, C. G.	Minneapolis
Salter, R. A.	Virginia
Samson, E. R.	Stillwater
‡Samuelson, L. G.	Mankato
Samuelson, Samuel	Minneapolis
Sandell, S. T.	Nopeming
Sanderson, A. G.	Ah-Gwah-Ching
†Sanderson, E. T.	Marshall
Sandt, K. E.	Minneapolis
Sandven, N. O.	Paynesville
Sanford, A. H.	Rochester
Sanford, J. A.	Farmington
Sarff, O. E.	Minneapolis
Sarnecki, M. M.	St. Paul
Satersmoen, Theodore	Pelican Rapids
Sather, Allen	Crookston
Sather, E. R.	Alexandria
Sather, G. A.	Fosston
‡Sather, R. N.	McIntosh
‡Sather, R. O.	Crookston
Satterlee, H. W.	Lewiston
Satterlund, V. L.	St. Paul
‡Sauer, W. G.	Rochester
Savage, F. J.	St. Paul
Sawatzky, W. A.	Minneapolis
Sax, M. H.	Duluth
Sax, S. G.	Dulut
Sayre, G. P.	Rochest
Scales, J. R.	Temple, Texa
Schaaf, F. H. K.	Minneapoli
Schade, F. L.	Worthingto
Schaefer, J. F.	Owaton
Schaefer, Samuel	Winon
Schafer, L. A.	Rochester
Schaefer, W. G.	Minneapolis
Schamber, W. F.	Parkers Prairie
Schatz, F. J.	St. Cloud
‡Scheetz, R. J.	Rochester
‡Scheifley, C. H.	Rochester
†Scheldrup, N. H.	Minneapolis
Scherer, L. R.	Minneapolis
‡Scherling, S. S.	Taylors Falls
Schiele, B. C.	Minneapolis
Schimelpfenig, G. T.	Chaska
Schleinitz, F. B.	Battle Lake
Schlesselman, G. H.	Anoka
Schlesselman, J. T.	Mankato
‡Schlicke, C. P.	Rochester
Schmidt, G. F.	Minneapolis
Schmidt, H. W.	Rochester
Schmidt, Mary A.	Buffald
Schmidt, P. A.	Good Thunder
Schmidt, P. G., Jr.	Granite Falls
Schmidt, W. R.	Worthington
Schmidtke, R. L.	St. Paul
†Schmitt, A. F.	Minneapolis
‡Schmitt, G. F.	Rochester
†Schmitt, S. C.	Los Angeles, Calif.
Schmitz, A. A.	Mankato
Schmitz, E. J.	Holdingford
‡Schmitz, R. L.	Rochester
‡Schneider, H. H.	Rochester
†Schneider, J. P.	Minneapolis
Schneider, L. E.	Duluth
Schneider, P. J.	Adams
Schneidman, N. R.	Minneapolis
Schoch, R. B. J.	St. Paul
Scholpp, O. W.	Hutchinson
‡Scholten, R. A.	Rochester
Schons, Edward	St. Paul
Schottler, G. J.	Dexter
Schottler, M. E.	Minneapolis
Schroder, C. H.	Duluth
Schroeckenstein, H. F.	St. Paul
Schroeppel, J. E.	Winthrop
†Schuldt, F. C.	St. Paul
Schultz, J. A.	Albert Lea
Schultz, J. H.	Minneapolis
‡Schultz, P. J.	Minneapolis
Schulze, A. G.	St. Paul
Schulze, W. M.	Swanville
†Schussler, O. F.	Minneapolis
Schutz, E. S.	Mountain Lake
Schwartz, V. J.	Minneapolis
‡Schweiger, T. R.	Hibbing
†Schwyzer, Gustav	Minneapolis
Schwyzer, H. C.	St. Paul
Scofield, C. L.	Benson
Scott, E. E.	St. Paul
†Scott, F. H.	Minneapolis
Scott, H. G.	Minneapolis
‡Sealy, W. B.	Rochester
†Seashore, Gilbert	Minneapolis
Seashore, R. T.	Minneapolis
Seebach, Lydia M.	Rochester
Seham, Max	Minneapolis
Seifert, M. H.	Excelsior
Seifert, O. J.	New Ulm
Seitz, S. B.	Barnesville
Seldon, T. H.	Rochester
‡Seljeskog, S. R.	Minneapolis
Sellers, G. K.	Dassel
Selmo, J. D.	Norwood
Selvig, H. S.	St. Paul
Senescall, C. R.	Enumclaw, Wash.
‡Sengpiel, G. W.	Rochester
†Senkler, G. E.	St. Paul
Senn, E. W.	Owatonna
Serkland, J. C.	Rothsay
*Sessions, J. C.	Minneapolis
Sether, A. F.	Ruthton
Setzer, H. J.	St. Paul
‡Seybold, W. D.	Rochester
*Shaleen, A. W.	Hallock
Shandorf, J. F.	Minneapolis
Shannon, W. R.	St. Paul
Shaperman, Eva P.	Minneapolis
*Shapiro, E. Z.	Duluth
Shapiro, M. J.	Minneapolis
Sharp, D. V.	Minneapolis
‡Sharpe, W. S.	Rochester
Shastid, T. H.	Duluth
Shaw, A. W.	Virginia
Shaw, H. A.	Lake Park
Shedlov, Abraham	Fosston
Sheedy, C. L.	Austin
‡Shelden, J. T.	Rochester
*Shelden, W. D.	Rochester
†Shellman, J. L.	Pacific Palisades, Calif.
‡Shepard, V. D.	Rochester

Sheppard, C. G...........Hutchinson
*Sheppard, P. E...........Hutchinson
Sher, D. A.................Virginia
Sheridan, V. E.............Rochester
Sherman, C. H..............Bayport
Sherman, C. L..............Luverne
Sherman, H. F...........Cambridge
Sherman, R. V............Red Wing
Sherwood, G. E.............Kimball
‡Shick, R. M...............Rochester
‡Shima, G. J.............Minneapolis
Shimonek, S. W............St. Paul
‡Shonyo, E. S..............Rochester
Short, Jacob.................St. Paul
*Shrader, J. S.............Lamberton
‡Shullenberger, C. C.........Rochester
‡Sidell, C. M...............Rochester
‡Sidell, R. H...............Rochester
Siegel, Clarence.............St. Paul
Siegel, J. S..................Virginia
Siegmann, W. C..........Minneapolis
Silver, J. D..............Minneapolis
Simison, C..............Barnesville
Simons, B. H................Chaska
Simons, E. J..............Swanville
Simons, L. T...............St. Paul
Simons, S. J.................Akeley
Simonson, D. B.........Minneapolis
‡Simonson, K. MacL.......Rochester
Simpson, E. M...........Minneapolis
Sinamark, Andrew...........Hibbing
Singer, B. J.................St. Paul
Sinykin, M. B...........Minneapolis
Siperstein, D. M.........Minneapolis
Sisler, C. E...........Grand Rapids
†Sivertsen, Andrew............Nisswa
Sivertsen, Ivar..........Minneapolis
Sjostrom, L. E.............St. Peter
‡Skaug, H. M...............Chatfield
Skillern, P. G., Jr...........Rochester
†Skinner, H. O...............St. Paul
Skjold, A. C............Minneapolis
Slater, S. A............Worthington
‡Sloan, Julius.............Minneapolis
Slocumb, C. H............Rochester
‡Sluder, F. S...............Rochester
‡Smalley, R. E.............Rochester
Smisek, E. A...............St. Paul
‡Smisek, F. M. E.........Minneapolis
Smith, Adam M.........Minneapolis
Smith, Archie M.......Minnneapolis
‡Smith, A. L...............Rochester
Smith, B. A...................Crosby
Smith, C. M..................Duluth
*Smith, F. D...............Rochester
Smith, F. H...............Rochester
Smith, F. L...............Rochester
‡Smith, G. G....................Fulda
Smith, H. L...............Rochester
Smith, H. R............Minneapolis
Smith, L. G............Montevideo
Smith, L. A.................Balaton
Smith, L. A...............Rochester
Smith, Margaret I.......Minneapolis
Smith, M. W............Red Wing
Smith, N. D...............Rochester
Smith, N. M............Minneapolis
Smith, N. R............Minneapolis
Smith, V. D. E.............St. Paul
Smith, W. R...........Grand Marais
Snell, A. M................Rochester
‡Snider, G. G.............Rochester
Snyder, G. W..............St. Paul
Snyker, O. E...................Ely
Soderlind, R. T..........Minneapolis
Sogge, L. L................Windom
Sohlberg, O. I..............St. Paul
Sohmer, A. E..............Mankato
Solhaug, S. B...........Minneapolis
Solsem, F. N. S......Ah-Gwah-Ching
Sommer, A. W...............Elmore
Sommers, Ben..............St. Paul
Sonnesyn, N. N............Le Sueur
Sorem, M. B...............St. Paul
Sorum, F. T..................Jasper
Souster, B. B...............St. Paul
Spang, A. J..................Duluth
Spang, J. S..................Duluth
Spano, J. P.............Minneapolis
Spar, A. A................Rochester
Spicer, F. W.................Duluth
Spink, W. W............Minneapolis
‡Spittler, R. O.........New Richland
Sprafka, J. M..............St. Paul
Sprague, R. G............Rochester
Spratt, C. N............Minneapolis
Spray, Paul................Rochester
Spurbeck, R. G..............Cloquet
Spurzem, R. J.................Anoka
Stafford, C. E..............Baudette
Stahr, A. C.................Hopkins
Stanford, C. E..........Minneapolis
Stangl, P. E...............St. Cloud
Stanley, C. R...........Worthington
‡Stark, F. M...............Rochester
Starks, W. O........... ..Rochester

Starekow, M. D.....Thief River Falls
‡Stebbins, T. L...........Minneapolis
Steffens, L. A............Red Wing
Stein, K. E................Lakeville
Stein, R. J.....................Pierz
Steinberg, C. L.............St. Paul
Steiner, I. W................Winona
Stelter, L. A............Minneapolis
Stemsrud, H. L...........Alexandria
Stenstrom Annette E. T...Minneapolis
Stephan, E. L..............Hinckley
Sterner, E. G................St. Paul
Sterner, E. R................St. Paul
Sterner, O. W...............St. Paul
Stevens, John................Gonvick
Stevenson, B. M...............Fulda
Stevenson, F. W...........Faribault
Stewart, Alexander ....St. Paul
‡Stewart, D. E..........Grand Rapids
Stewart, N. E....St. Petersburg, Fla.
Steward, R. I...........Minneapolis
Stickney, J. M.............Rochester
Stillwell, W. C..............Mankato
Stilwell, G. G..............Rochester
Stinnette, S. E..............St. Paul
Stokes, G. D...............Rochester
Stoesser, A. V...........Minneapolis
Stolpestad, A. H............St. Paul
‡Stolpestad, H. L............St. Paul
†Stomel, Joseph....Los Angeles, Calif.
Stout, H. A...............Rochester
Stone, S. P.............Minneapolis
‡Stover, Lee................Rochester
†Strachauer, A. C.........Minneapolis
‡Stransky, T. W...........Owatonna
Strate, G. E................St. Paul
Strathern, C. S............St. Peter
Strathern, F. P............St. Peter
Strathern, M. L..............Gilbert
Stratte, A. K..............Pine City
Stratte, H. C................Windom
Straus, M. L...............St. Paul
Strobel, W. G.................Duluth
Stroebel, C. F., Jr..........Rochester
‡Strom, G. W...............Rochester
Stromgren, D. T.........Minneapolis
Strong, M. L..............Rochester
Strout, G. E............Minneapolis
Stuart, A. B.................Cloquet
‡Stuart, R. L...............Rochester
Studer, D. J...............Faribault
Stuhr, J. W...............Stillwater
Sturre, J. R.............Minneapolis
Stuurmans, S. H.........Minneapolis
Sullivan, R. M..........Minneapolis
Sundt, Mathias ....Minneapolis
†Sutherland, C. G..........Rochester
Sutherland, H. N................Ely
Sutton, H. R...............Hoffman
‡Svien, H. J................Rochester
Swanson, J. A..............St. Paul
‡Swanson, P. E..............Virginia
Swanson, R. E..........Minneapolis
Swanson, R. R...........Albert Lea
Swanson, V. F.............Rochester
Swedberg, W. A...............Duluth
Swedenburg, P. A..........Swanville
Sweetser, H. B. Jr.......Minneapolis
†Sweetser, H. B., Sr.......Minneapolis
Sweetser, T. H..........Minneapolis
Sweitzer, S. E..........Minneapolis
†Swendseen, C. G.........Minneapolis
Swendson, J. J..............St. Paul
Swensen, R. G.........North Branch
Swenson, A. O................Duluth
Swenson, O. J...............Waseca
Swezey, B. F.................Buffalo
‡Sybilrud, H. W.............Bricelyn

Tangen, G. M...........Minneapolis
Tanquist, E. J............Alexandria
Taylor, C. W..................Duluth
‡Taylor, J. C...............Rochester
Taylor, J. H............Minneapolis
Teisberg, C. B..............St. Paul
Teisberg, J. E..........Middle River
Telford, V. J..............Litchfield
Tenner, R. J............Minneapolis
Terrell, B. J...............Nopeming
Tesch, G. H...............Elk River
Thabes, J. A...............Brainerd
Thabes, J. A., Jr............Brainerd
Thayer, E. A.................Truman
Thielen, R. D........... St. Michael
Thomas, G. E...........Minneapolis
Thomas, G. H...........Minneapolis
Thomas, H. R.............Rochester
‡Thomas, J. F..............Rochester
Thompson, Arthur............Cokato
Thompson, C. O..........Hendricks
Thompson, F. A.............St. Paul
Thompson, G. J............Rochester
Thompson, H. B........Fergus Falls
Thompson, V. C....Marine-on-St. Croix
Thompson, W. H.........Minneapolis
Thomson, J. M.........Chicago, Ill.

Thornell, W. C.......Cincinnati, Ohio
Thoreson, M. C. Bernice..So. St. Paul
Thysell, D. M............Minneapolis
Thysell, F. A..............Moorhead
Thysell, V. D................Hawley
Tibbetts, M. H...............Duluth
‡Tice, G. I...................Rochester
‡Tice, W. A.................Rochester
Tifft, C. R..................St. Paul
Tilderquist, D. L.............Duluth
Tillisch, J. H.............Rochester
Tingdale, A. C..........Minneapolis
Tingdale, Carlyle............Hibbing
Todd, R. L..............Minneapolis
Tofte, Josephine..........Minneapolis
Tomlin, H. M..............Rochester
‡Tompkins, S. F............Rochester
Torgerson, W. B................Oklee
‡Tosseland, N. E............Rochester
Trach, B. B.............Minneapolis
Tracht, R. R. ....St. Paul
Traeger, C. A..............Faribault
Traxler, J. F.............Henderson
Traxler, F. J.............Henderson
Tregilgas, H. R.........So. St. Paul
‡Trimingham, H. L.........Rochester
Troost, H. B...............Mankato
Trow, J. E...............Minneapolis
‡Trow, W. H.............Minneapolis
Troxil, Elizabeth.........Minneapolis
Trueman, H. S..........Minneapolis
Truesdale, C. W.............Glencoe
Trutna, T. J.............Silver Lake
Trytten, E. G............OakTerrace
Tudor, R. B.............Minneapolis
Tudor, Robert B............Hibbing
Tunstead, H. J..........Minneapolis
Tuohy, E. B...............Rochester
Tuohy, E. L...................Duluth
Turnacliff, D. D........Minneapolis
Tweedy, G. J................Winona
Tweedy, J. A................Winona
Tweedy, R. B................Winona
Twyman, Richard..........Rochester

Ude, W. H.............Minneapolis
Uhley, C. G...............Crookston
Uhrich, E. C..............Rochester
‡Uihlein, Alfred............Rochester
Ulrich, H. L............Minneapolis
Underdahl, L. O...........Rochester
Undine, C. A...........Minneapolis
Upshaw, Betty Y...........Rochester
‡Urban, D. A..............Rochester
Urberg, S. E..................Duluth

Vadheim, A. L..................Tyler
‡Vail, J. B..................Henning
Valentine, W. H...............Tracy
Van Cleve, H. P., Jr.....Minneapolis
‡Van Demark, R. E........Rochester
Vandersluis, C. W...........Bemidji
Van Meier, Henry..........Stillwater
Van Valkenberg, J. D.....Floodwood
Varco, R. L.................St. Paul
Varney, J. H..............Rochester
Vaughan, V. M...............Truman
Vaughn, L. D.............Rochester
Veirs, D. M.................St. Paul
Veirs, Ruby J. S...........St. Paul
Venables, A. E..............St. Paul
Veranth, L. A..............St. Cloud
Vezina, J. C................Mapleton
Vigran, Myron............Rochester
Vik, A. E................Minneapolis
Vik, Melvin.................Onamia
Virnig, M. P...................Wells
Vogel, H. A. L.............New Ulm
Vogel, J. H................New Ulm
Von der Weyer, W. H.......St. Paul

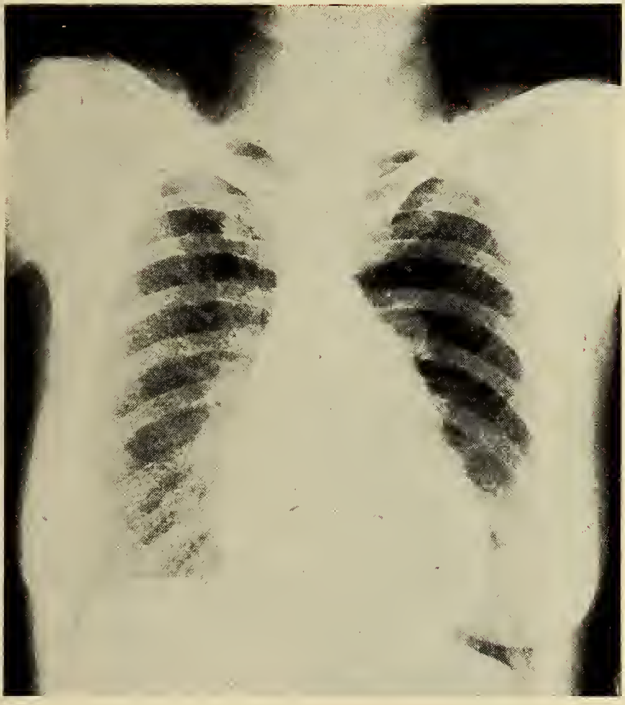
Waas, C. W..................St. Paul
Wadd, C. T................Janesville
Wagener, H. P.............Rochester
Wagner, N. W.............Graceville
Wahlberg, E. W....Enumclaw, Wash.
Wahlquist, H. F.........Minneapolis
Wakefield, E. G...........Rochester
Walch, A. E............Minneapolis
Waldron, C. W..........Minneapolis
Walfred, K. A..............St. Cloud
†Walker, A. E.................Duluth
Walker, A. E................St. Paul
Wall, C. R...............Minneapolis
‡Wallace, G. T.............Rochester
Wallace, M. O................Duluth
Waller, J. D..................Wilmot
Walsh, F. M.................St. Paul
Walsh, M. N..............Rochester
Walsh, W. T............Minneapolis
Walter, C. W...............St. Paul
Walter, G. F............Farmington
Walters, Waltman..........Rochester
Wangensteen, O. H......Minneapolis
‡Ward, B. H................Rochester
Ward, P. A..............Minneapolis

Warner, J. J.	Perham
Warren, C. A.	St. Paul
Wasson, L. F.	Alexandria
Watkins, C. H.	Rochester
Watkins, D. H.	Rochester
Watson, A. M.	Royalton
Watson, C. G.	Minneapolis
Watson, C. J.	Minneapolis
†Watson, J. D.	Minneapolis
Watson, P. T.	Bemidji
Watson, S. W.	Royalton
Watson, W. J.	Holdingford
Watz, C. E.	St. Paul
Waugh, J. M.	Rochester
Weaver, M. M.	Minneapolis
Weaver, P. H.	Faribault
Webb, E. A.	Minneapolis
Webb, Margaret A.	Rochester
Webb, R. C.	Minneapolis
Webber, F. L.	St. Paul
Weber, H. M.	Rochester
Webster, L. J.	Battle Lake
Weed, L. A.	Rochester
Weir, J. F.	Rochester
Weis, B. A.	St. Paul
Weisberg, Maurice	St. Paul
‡Weisel, Wilson	Rochester
†Weiser, G. B.	New Ulm
Weismann, R. E.	Rochester
‡Wellman, T. G.	Lake City
Wellner, T. O.	Rochester
Wells, A. H.	Duluth
‡Wells, G. R.	Rochester
Wells, J. J.	Rochester
Wells, W. B.	Jackson
Wenner, W. T.	St. Cloud
Wentworth, A. J.	Mankato
‡Wenzel, G. P.	St. Paul
Werner, O. S.	Cambridge
Westby, Magnus,	Madison
Westby, Nels	Madison
†Westerman, A. E.	Montgomery
Westerman, F. C.	Montgomery
‡Westphal, K. F.	Minneapolis
Westrup, J. E.	Lanesboro
Wethall, A. G.	Minneapolis
Wetherby, Macnider	Minneapolis
Weum, T. W.	Minneapolis
Wheeler, D. W.	Duluth
Wheeler, M. W.	St. Paul
Whitacre, J. C.	St. Paul
White, A. A.	Minneapolis
White, E. F., Jr.	Rochester
‡White, J. D.	Rochester
‡White, R. R. III	Rochester
White, S. M.	Minneapolis
White, W. D.	Minneapolis
‡Whitehouse, F. R.	Rochester
Whitesell, L. A.	Minneapolis
Whitmore, F. W.	St. Paul
Whitney, R. A.	Cambridge
Whitson, S. A.	Albert Lea
Whittemore, D. D.	Bemidji
Widen, W. F.	Minneapolis
‡Wiechman, F. H.	Montgomery
Wieczorowski, Elsie	Rochester
Wilcox, A. E.	Minneapolis
‡Wildebush, F. F.	Minneapolis
Wilder, K. W.	Minneapolis
Wilder, R. L.	Minneapolis
Wilder, R. M.	Rochester
‡Wilder, R. M., Jr.	Rochester
Wilken, P. A.	Minneapolis
Wilkinson, Stella L.	Moose Lake
Wilkowske, R. J.	Owatonna
Will, C. B.	Bertha
Will, W. W.	Bertha
†Willcutt, C. E.	Phoenix, Ariz.
Williams, A. B.	St. Paul
Williams, C. A.	Pipestone
Williams, C. K.	St. Paul
Williams, H. L., Jr.	Rochester
Williams, H. O.	Lake Crystal
Williams, J. A.	St. Paul
‡Williams, J. A.	Hibbing
Williams, L. A.	Slayton
Williams, M. R.	Cannon Falls
Williams, R. V.	Rushford
†Williams, Robert	Carthage, Ill.
Willius, F. A.	Rochester
‡Willson, D. M.	Rochester
Wilmer, H. A.	Rochester
Wilmot, C. A.	Litchfield
Wilmot, H. E.	Litchfield
Wilson, B. N.	Rochester
Wilson, C. E.	Blue Earth
Wilson, F. C.	Austin
‡Wilson, G. T.	Rochester
Wilson, H. T.	Rochester
Wilson, J. M.	Rochester
Wilson, J. V.	St. Paul
Wilson, J. A.	St. Paul
Wilson, K. G.	Rochester
‡Wilson, K. G.	Rochester
Wilson, R. H.	Winona
Wilson, T. R.	Rochester
Wilson, V. O.	Minneapolis
†Wilson, W. F.	Lake City
Wilson, W. E.	Northfield
Wiltrout, I. G.	Oslo
Wingquist, C. G.	Crosby
Winnick, J. B.	St. Paul
Winter, I. F.	Rochester
Winter, J. A.	Duluth
Winther, Nora M. C.	Minneapolis
‡Wipperman, F. F.	Minneapolis
Witham, C. A.	Minneapolis
Withrow, M. E.	International Falls
Wittich, F. W.	Minneapolis
Wohlrabe, A. A.	Minneapolis
Wohlrabe, C. F.	No. Mankato
Wohlrabe, E. J.	Springfield
Wold, K. C.	St. Paul
Wold, L. E.	Rochester
Wolf, A. H.	Rochester
Wolf, W. W.	Minneapolis
‡Wolfe, H. H.	St. Paul
Wolff, H. J.	St. Paul
Wolkoff, H. J.	St. Paul
Wollaeger, E. E.	Rochester
Wolner, O. H.	St. Peter
‡Wolstan, S. D.	Minneota
Woltman, H. W.	Rochester
Wood, H. G.	Rochester
‡Wood, W. D.	Rochester
‡Wood, W. W., Jr.	Rochester
Woodruff, C. W.	Chatfield
Word, H. L.	St. Paul
Workman, W. G.	Tracy
Wozencraft, J. P.	Rochester
Wray, W. E.	Campbell
†Wright, C. D.	Minneapolis
†Wright, C. O.	Luverne
Wright, S. G.	Minneapolis
Wright, W. S.	Minneapolis
‡Wulf, R. F.	Rochester
Wunder, H. E.	Shakopee
Wyatt, O. S.	Minneapolis
Wynne, H. M. N.	Minneapolis

Yaeger, W. W.	Marshall
‡Yeager, C. L.	Rochester
Ylvisaker, R. S.	Minneapolis
Yoerg, O. W.	Minneapolis
Young, H. H.	Rochester
Young, T. O.	Duluth
Younger, L. I.	Winona
Youngren, E. R.	St. Paul

Zachman, A. H.	Melrose
‡Zachman, L. L.	St. Paul
Zaslow, Jerry	Rochester
Zeman, E. W.	Hibbing
Zemke, E. E.	Fairmont
Zierold, A. A.	Minneapolis
Zimmermann, H. B.	St. Paul
Zinter, F. A.	Minneapolis
Ziskin, Thomas	Minneapolis
Zlatovski, M. L.	Duluth
Zuschlag, Ella	Rochester

congestive heart failure



The de-edematizing action of Searle Aminophyllin decreases the cardiac burden, permitting the heart muscle to function more efficiently.

Searle Aminophyllin produces diuresis whether administered orally or parenterally, and thus has a field of usefulness covering emergencies and chronic congestive cardiac failure.

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designed to aid
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Spencer designers creat spinal supports varying from flexibility to rigidity, as prescribed.

VISCEROPTOSIS OR
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WITH SYMPTOMS

Abdominal support in a Spencer is from below, upward and backward. It is accurately correlated with back support to effect posture improvement.

HERNIA

if inoperable, or when surgery is delayed. A Spencer improves the posture, gives support to the abdomen, and controls the hernia comfortably.

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POSTOPERATIVE

A Spencer provides whatever degree of abdominal support is required and gives restful support to back.

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Spencer Breast Supports, like all Spencers, are individually designed to meet the specific needs of each patient.

You state your needs—we save you all bother as to proper design, fit, comfort. The Spencer you prescribe will be individually designed, cut and made after a description of the patient's body and posture has been recorded—and 15 or more measurements have been taken. This is an assurance that your requirements will be accurately met.

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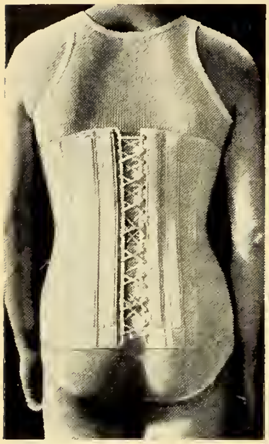
For Abdomen, Back and Breasts



Spencer Spinal Support designed especially for this man. In this case back lacers were specified.

Spencer Breast Support designed especially for this woman to support heavy, ptosed breasts.

REPORTS and ANNOUNCEMENTS

JACKSON CLINIC POSTGRADUATE MEETING

Dr. Karl Meyer of Chicago will address the next meeting of the Jackson Clinic Postgraduate Group to be held Thursday and Friday, May 16 and 17, at the Clinic.

The purpose of these refresher courses is to acquaint postgraduate members with the new developments in medicine as soon as their practical worth has been established. Every effort is made to present programs based on clinical work that may be used in everyday practice.

Any physician who is interested may attend. Veterans returning from service have an opportunity at this meeting to get a refresher course in civilian practice. Those wishing to attend should make reservation as soon as possible with the program chairman, Dr. Russell Jackson.

THURSDAY, MAY 16

Morning Session—9:00 A.M.

Clinical Interpretation of the Basal Metabolic Rate.
Demonstration of Technique of Basal Metabolism Test..........................Miss Lounsbury
Significance of the Basal Metabolic Rate in Hyperthyroidism............Dr. Arnold S. Jackson
Significance of the Basal Metabolic Rate in Hypothyroidism............Dr. Addie M. Schwittay
Significance of the Basal Metabolic Rate in Functional Disorders.........Dr. Russell Jackson
Clinical Interpretation of Laboratory Tests
Demonstration of Laboratory Tests ....Misses Hardy, Kelly, and Fay
Significance of Laboratory Tests;
Blood Dyscrasias......................Dr. Harold Marsh
Liver Dyscrasias......................Dr. Roger E. Henning
Kidney Dyscrasias....................Dr. Albert W. Bryan
Demonstration of Allergy Tests.
Significance of the Tests........Dr. Claude F. Schroeder
Demonstration of Allergy Tests. Significance of the Tests........Dr. Claude F. Schroeder, Dr. John A. Hurlbut

Luncheon—12:30 P.M.

Loraine Hotel. Round Table Discussion by the Morning Speakers.

Afternoon Session—2:00 P.M.

The Rh Factor......................Dr. Addie M. Schwittay
Demonstration of Blood Testing, Grouping Cross Matching, etc....................Laboratory Technicians
Diagnosis and Treatment of Sterility..Dr. Donald L. Dickerson
Diagnosis of Cancer of the Breast..........Dr. Russel Jackson
Lesions of the Genito-urinary Tract.......Dr. George H. Ewell
Treatment of Varicose Veins with Demonstration.....................Dr. Luther E. Holmgren

Dinner—6:30 P.M.

Loraine Hotel.
Address—Dr. Karl Meyer of Chicago
Color Motion Pictures of Mexico
Doctors' wives are invited to attend

FRIDAY, MAY 17

Morning Session—8:00 A.M.

Operative Clinic by Staff, Methodist Hospital.
Dry Clinic by Staff, Methodist Hospital.
Pre and Postoperative Care............Dr. Donald L. Dickerson
Recent Developments in Orthopedics....Dr. Arthur C. Stirling
Recent Developments in Surgery........Dr. Arnold S. Jackson

Luncheon—12:30 P.M.

Loraine Hotel. Round Table Discussion by the Morning Speakers.
Cancer of the Colon.......................Dr. James A. Jackson
Recent Developments in Pediatrics........Dr. Margaret Prouty
Problems in Gynecology...................Dr. Christine Thelen
Problems in Dietetics...........................Racheal Weirich
Case Presentations........Drs. Reginald H. Jackson, Michael DeSalvo, John H. Dix, and Elmer J. Hawkins
Sinus Disease..............................Dr. John A. Hurlbut
Meeting Adjourned

(Continued on Page 500)

A NEW CEREAL FOR

Infants and Children WITH PAPAYA FRUIT

DRIED FRESH TO PRESERVE NATURAL ENZYMES AND PECTINS

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CEROL represents a rich source of the Vitamin B Complex, iron and other important minerals. See back carton for vitamin and mineral content.
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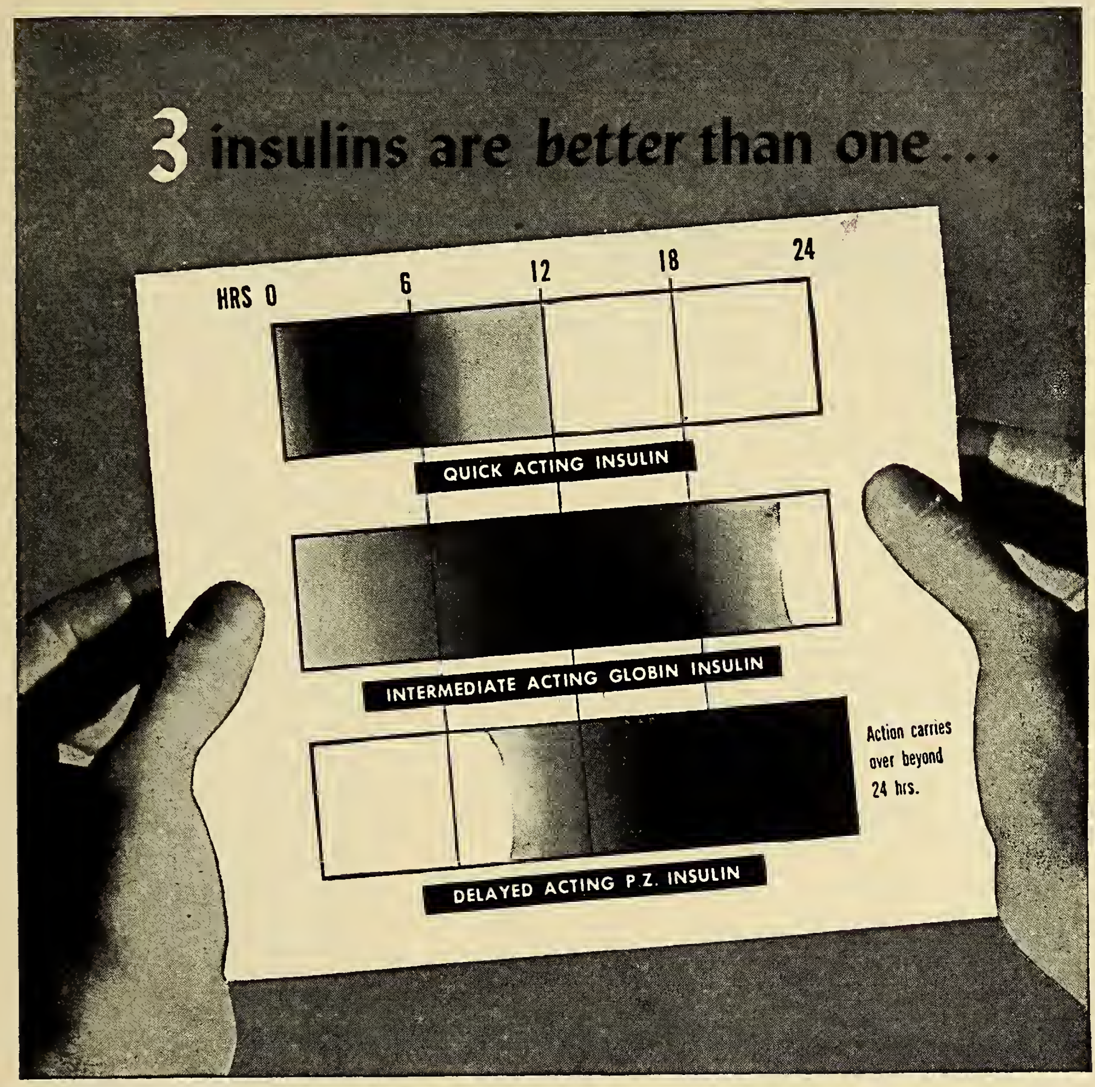

THE PHYSICIAN treating diabetes today has the choice of three types of insulin. One is rapid-acting but short-lived. Another is slow-to-start but prolonged. Intermediate between them is the new 'Wellcome' Globin Insulin with Zinc which starts fairly promptly and continues *for sixteen hours or more*. Action is maximal during the times of major carbohydrate intake but diminished toward bedtime so that the likelihood of nocturnal reactions is decreased. Today, the physician is wise to consider all *three* insulins.

'Wellcome' Globin Insulin with Zinc is a clear solution, comparable to regular insulin in its freedom from allergenic properties.

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WHEN the menopausal storms set in—vasomotor disturbances, mental depression, unaccountable pain and tension—physicians today can take prompt, positive action to alleviate symptoms.

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For control of menopausal symptoms, you may turn with confidence to Solution of Estrogenic Substances, Smith-Dorsey . . . manufactured in the fully equipped, capably staffed Smith-Dorsey Laboratories . . . meeting rigid standards of purity and potency.

With such a medicinal, you can indeed *do something* about "stormy weather."

SOLUTION OF *Estrogenic Substances*

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Manufacturers of Pharmaceuticals to the Medical Profession Since 1908

REPORTS AND ANNOUNCEMENTS

(Continued from Page 496)

WASHINGTON COUNTY

The Washington County Medical Society held its regular monthly meeting Tuesday, April 9, in Stillwater.

The different plans for prepayment medical insurance as proposed in the questionnaire sent out by the State Medical Association were discussed. Guests of the evening were Miss Madden, School Nurse, and Alice C. Gearty, the new County Nurse, who briefly outlined her work on the lines approved by the Minnesota State Medical Association and the State Health Department.

A movie on the subject of "Edema" was shown and proved very interesting.

WOMAN'S AUXILIARY

Mrs. Edward V. Goltz, *President*
Saint Paul, Minnesota
Mrs. John K. Butler, *Editor*
Carlton, Minnesota

ANNUAL STATE MEETING

A cordial invitation is extended to all Auxiliary members and visiting doctors' wives to attend the 24th Annual Meeting of the Woman's Auxiliary of the Minnesota State Medical Association, which will be held in St. Paul, May 20, 21 and 22. Auxiliary headquarters will be at the Lowry Hotel. Registration will take place both Monday, May 20 and Tuesday, May 21 at 9 A.M. Tickets for the various activities may be procured when registering. The Ramsey County Auxiliary has made most attractive plans for visiting women.

The Pre-Convention Board Meeting will take place at 11 A.M. Monday, May 20, at the Minnesota Club. That afternoon the officers will be honored at a Tea which will be held at the White Bear Yacht Club. Ramsey County members will be hostesses for this Tea, and all women are invited.

Tuesday morning at 10 A.M. the annual meeting will open at the Lowry Hotel. This will be followed by a luncheon at one o'clock. All doctors' wives are invited to attend the meeting and the luncheon. Reports of all committees and county residents will be read and election of new officers will be held. The guest speaker at the luncheon will be Dr. George M. Curtis, Professor of Surgery, Ohio State University College of Medicine, Columbus, Ohio.

Wednesday morning, at 10 A.M., the Ramsey County Auxiliary will entertain all visiting doctors' wives at a farewell breakfast at the Hotel Saint Paul.

Assisting Mrs. Wm. Van der Weyer, President of the Ramsey County Auxiliary, in making plans for the convention are Mrs. Charles W. Waas, General Chairman

(Continued on Page 502)

Steadfast . . .

ON UNSHAKABLE FOUNDATIONS

The Borobudur on Java has resolutely survived eleven centuries of unrelenting tropical climate, savage jungle growth and volcanic earthquakes—because of its unshakable foundations. • Likewise, optimum development in childhood is dependent upon a firm nutritional foundation laid in early infancy. • BIOLAC furnishes among other essential nutrients the valuable proteins of milk, an outstanding source of all the indispensable amino acids . . . the prerequisite building blocks of strong tissues. • BIOLAC is bacteriologically safe . . . convenient . . . economical . . . readily available.

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MODIFIED MILK FOR INFANTS
THE BORDEN COMPANY

Quickly prepared . . . easily calculated: 1 fl. oz. Biolac to 1½ fl. oz. water per lb. of body weight.

ANNUAL STATE MEETING

(Continued from Page 500)

and Mrs. James Ferguson, Co-Chairman. Chairmen and Co-Chairmen of other committees are:

Registration—Mrs. Alexander McEwan; Mrs. A. S. Arnquist.

Transportation—Mrs. L. Dack, Mrs. R. P. Warnock.

Annual Meeting—Mrs. James L. Benepe; Mrs. J. R. Aurelius.

Tea—Mrs. K. C. Wold; Mrs. O. I. Sohlberg.

Breakfast—Mrs. Bernard O'Reilly; Mrs. Clayton Williams.

Entertainment—Mrs. Donald Bacon.

Music—Mrs. Harry Zimmermann.

COUNTY AUXILIARY NEWS

Blue Earth

Mrs. H. Bradley Troost was elected president of Blue Earth Auxiliary on March 25 at the Mankato Clinic. The other officers for 1946-47 will be Mrs. George Penn, vice president, Mrs. W. Kinghorn, secretary, and Mrs. John Michelson, treasurer.

Mrs. J. E. Hues displayed articles of interest from India, Burma, and China.

A discussion on medical legislation was conducted.

Hennepin

Over 500 invitations were issued by the Woman's Auxiliary of Hennepin County to representatives of women's organizations to be guests at the fourth annual health meeting and tea on Friday, March 1, in the Medical Arts Lounge. Dr. Myron M. Weaver, acting assistant dean of the Medical School of the University of Minnesota, spoke on "Medical Practice in the Changing Social Order." Afterwards the guests were invited to ask questions and a lively discussion resulted. Mrs. Russell Morse was in charge of the meeting, and Dr. A. J. Campbell, president of Hennepin County Medical Society, introduced Dr. Weaver. Mrs. Reinhold M. Erickson and Mrs. Harold F. Wahlquist were social chairmen.

On February 28, the Medical Society and the Auxiliary held a joint dinner party and had a splendid time. More than 400 guests were present. The 250 club entertained. Mrs. Harvey Nelson was chairman of arrangements.

The Auxiliary will maintain a booth in the Medical Arts Building during the Cancer Fund drive.

Kandiyohi-Swift-Meeker

On March 21 the Auxiliary met at Lakeland Hotel, Willmar, and entertained those doctors' wives who do not belong to the Auxiliary. Kandiyohi-Swift-Meeker Auxiliary has nineteen members.

Mower

Mrs. W. B. Grise, Austin, was hostess to the Mower County Auxiliary on March 25.

Nicollet-Le Sueur

Mrs. H. B. Aitkens of Le Center was made an honorary member as a result of a decision made by the Nicollet-Le Sueur Auxiliary to honor wives of doctors

(Continued on Page 506)

Home of the
Auditorium and
Library of the
Ramsey County
Medical Society

☆

Lowry Medical Arts Buildings

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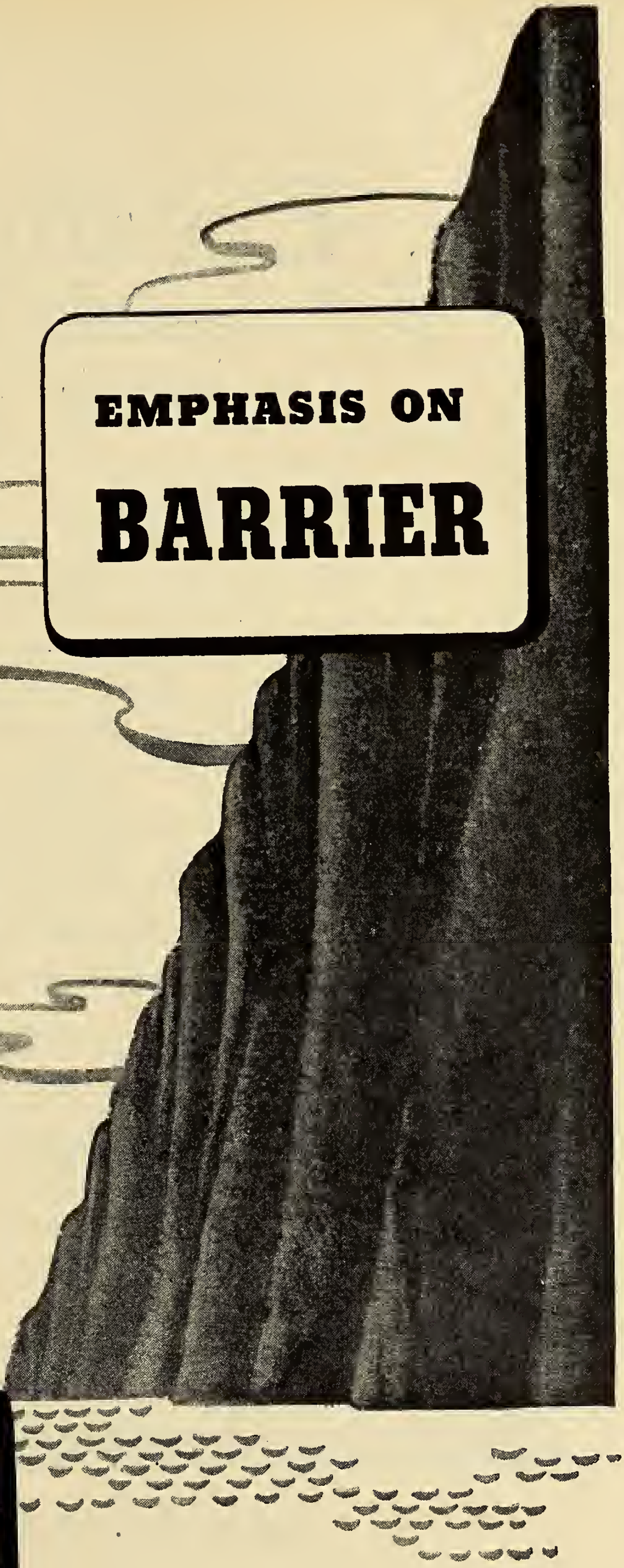
Saint Paul Minnesota



EMPHASIS ON BARRIER

AUTHORITATIVE clinical investigators place strong emphasis on the importance of the barrier in conception control.

In a recent comprehensive report[1] physicians indicated an overwhelming preference for the diaphragm and jelly method (93% of 36,955 new cases).

In keeping with these expressed opinions we continue to suggest that for the optimum in protection the physician prescribe the combined use of occlusive diaphragm and spermatocidal jelly.

You assure your patient a product of highest quality when you specify *Ramses* REG. U.S. PAT. OFF.

Competent observers report:

"Jellies and creams used without mechanical devices yield relatively high protection, but studies have not proven them fully dependable to block the external os, or to invalidate all sperm."[2]

"When no type of occlusive pessary can be fitted, or when the woman refuses to use one, the only other reliable method is the use of the condom. With proper technic and instruction this method is highly reliable but has many disadvantages which the diaphragm method overcomes."[3]

1. Clinic Reports: Planned Parenthood Services in the United States. Human Fertility 10: 25 (Mar.) 1945.
2. Dickinson, R.L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
3. Warner, M.P.: J.A.M.A. 115: 279 (July 27) 1940.

A MARK OF Ramses DEPENDABILITY

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Excellence
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. . . in judging the irritant properties of cigarette smoke . . . to base your evaluation on scientific research. In judging *research,* you *must* consider its *source**.

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60
Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.

TO THE PHYSICIAN WHO SMOKES A PIPE: We suggest an unusually fine new blend—COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

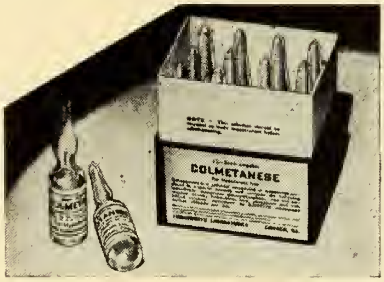
BRUCELLOSIS

(UNDULANT FEVER)

★ 10% of the population of this country has been infected — as estimated by Gould and Huddleson, 1938.

★ Brucellosis should always be suspected and ruled out, wherever low grade fever, or extreme fatigue, headaches, etc., are persistent. Investigators have stated that 25% of all chronic cases will react positive to Brucellosis, when tested.

★ Brucellosis now has been recognized as an important public health problem in this country, according to Carpenter.



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Clinical reports from doctors who have treated their Brucellosis cases with Colmetanese are uniform.

RESULTS ARE PROMPT

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Dr. ....

Address ....

City and State ....

COUNTY AUXILIARY NEWS

(Continued from Page 502)

who have completed fifty years of medical practice.

The Auxiliary met at the Cook-E-Jar, St. Peter, on March 20 for dinner. Afterwards a business meeting was held, at which plans were made for the annual cancer control drive. Members were also instructed on the part they are to take in opposing current medical legislation.

Olmsted-Houston-Fillmore-Dodge

Mrs. M. S. Henderson, president-elect of the State Medical Auxiliary, was honored on March 12 at a meeting held in Rochester. Mrs. E. V. Allen talked on the Murray-Wagner-Dingell Bill.

Plans were made for the annual Health Day for the lay public on April 23 at the Mayo Foundation House. Dr. A. R. MacLean of the Department of Neurology and Psychiatry of Mayo Clinic was the speaker.

Park Region

Auxiliary members were guests of the Medical Society at a dinner at River Inn Hotel, Fergus Falls, on March 21. The dinner was in honor of the doctors who had returned from the armed forces. Each doctor gave a brief account of some of his experiences.

Ramsey

Mrs. James L. Benepe presided at the March meeting held in the Ramsey County medical library auditorium on March 25. The social committee were hostesses. Dr. Myron Weaver was the speaker. The ladies also made surgical dressings.

Mrs. Wm. H. Von der Weyer, president, appointed Mrs. Charles W. Waas to be the general chairman of the State Medical meeting to be held in Saint Paul, May 20, 21, and 22. A tea, luncheon and style review, also a breakfast are among the plans being made to make the meeting pleasant for the visiting doctors' wives.

Renville

Renville County Auxiliary members met with the Medical Society at dinner at the Sweet Shop, Olivia, on March 12.

Redwood-Brown

A combined meeting of the Redwood-Brown Medical Society and Auxiliary was held at Turner Hall club rooms, New Ulm, in March. Dr. Carl Fritsche gave an interesting report of his experiences as Flight Surgeon in World War II. He also showed some movies.

St. Louis

Mrs. Mark Tibbetts was hostess to St. Louis County Medical Auxiliary on Tuesday, March 12. Mrs. A. T. Laird gave an enthusiastic review of Adamic's "A Nation of Nations." Mrs. H. E. Bakkila was in charge of the social committee. Mrs. G. Arvid Hedberg presided and presented plans for an open meeting in May at which Dr. Myron Weaver will talk.

Stearns-Benton

Mrs. W. T. Wenner, St. Cloud, was hostess to the Stearns-Benton Auxiliary on March 12. Mrs. J. C. Buscher gave a report on the cancer control course conducted at the Continuation Center.

Washington

Mrs. C. H. Sherman, Bayport, entertained the Auxiliary on March 12. Ten members and two guests were present. A slate of new officers was drawn up.

YOU CAN'T OVERRATE THE VALUE OF CONTROL

When you come to think of it, it's surprising how much control means. In various forms it adds enjoyment to sports—security to daily routine—satisfaction to work of skill.

And as *quality control* it assures safety in medicines. This is particularly well demonstrated in the development and production of U.D. pharmaceuticals. For throughout modern U.D. laboratories and plants a carefully conceived and remarkably efficient system of tests and checks results in products with an enviable reputation for consistent excellence.

Credit for maintenance of these high standards rests with a body of doctors, chemists and pharmacists, known as the Formula Control Committee. As the ultimate precaution, this group personally checks every finished product.

Such professional attention insures that your prescriptions are filled with finest ingredients when you specify U.D. pharmaceuticals. Your neighborhood Rexall Drug Store offers this service—together with complete facilities for meeting your patients' needs reliably and economically.

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is economical because stock solutions may be dispensed quickly and at low cost. Stock solutions keep indefinitely.

Mercurochrome is antiseptic and relatively non-irritating and non-toxic in wounds.

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In Memoriam

CHARLES CRAWFORD ALLEN

Dr. Charles Crawford Allen of Austin, Minnesota, died at the age of sixty on February 20, 1946, of coronary thrombosis, after thirty-five years of active medical practice in Minnesota.

Because of his genuine love of his fellow man, manifested daily by his quiet appreciation of the small comedies and tragedies of life that are unveiled only for the trusted physician, Dr. Allen was able to serve the art of Medicine as it should be served. He did not spare himself or attempt to avoid hardships when the welfare of the patient demanded his attention. "Maintain life, restore the sick and ease the suffering of men. You have no other object."

Those who have known him professionally and personally will recognize in his death the loss of a true "specialist in general practice"—one whose knowledge is deep enough and broad enough to give the maximum benefit to all patients who present themselves for treatment, and yet a knowledge that is tempered with wisdom and a keen appreciation of human inadequacies, found even in physicians, so that one is able to say "I do not know." It is significant that in his brief case at the time of his sudden, fatal illness, Dr. Allen carried a set of notes on tropical medicine, compiled at an army service school and loaned to him at his own request. He recognized the need for a personal refresher course in order to cope with diseases among returning veterans that might prove new and strange to one who had practiced solely in a northern climate.

Dr. Allen was born December 1, 1885, at Grand Rapids, North Dakota, and spent his boyhood at Ada, Minnesota, where he was graduated from high school. He later attended Carleton College and the University of Minnesota Medical School. He served his internship at Ancker Hospital, St. Paul, and practiced for a short time in 1911 at Pipestone before coming to Austin. His practice in Austin was interrupted by World War I, when he served in the army medical corps, attaining the rank of Captain. On his discharge in 1919, he, Dr. W. B. Grise, the late Dr. C. F. Lewis and the late Dr. E. C. Rebman, founded the Austin Clinic of which he remained an active member until his death.

Dr. Allen was active in organizations associated with his profession. He was past president of the Southern Minnesota Medical Society and the Mower County Medical Society, and a member of the Minnesota State Medical Association and the American Medical Association. He formerly served as city health officer, county physician, and chief-of-staff of St. Olaf Hospital, Austin.

(Continued on Page 510)

ADHERENCE TO A STANDARD

There are few more important activities than the production of medicaments for the relief of human ills—and none wherein the implications of responsibility are more profound.

Mass production on the grand scale is not necessarily an assurance of clinical efficacy. Doing a few things superlatively well provides products which merit deserved confidence.

Favored with an environment almost ideal for the important work being performed; guided by a staff of forward-thinking scientists; operated by personnel whose undiverted interest occupies each day, U. S. Standard Products Company are producing a selected and therapeutically efficient list of distinguished essentials for the medical profession.

OUTSTANDING U. S. STANDARD BIOLOGICALS:

DIPHTHERIA TOXOID

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Also a representative list of glandular products and pharmaceuticals.

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CHARLES CRAWFORD ALLEN

(Continued from Page 508)

He was also one of the profession's most active members in the community affairs, being identified with most of Austin's civic organizations. He was a member of the Austin American Legion post, Chamber of Commerce, Rotary Club, Austin Country Club, and had been active in the promotion of Boy Scout activities. A member of the Congregational Church, he served as a trustee and sang in the choir. He was also a trustee of Carleton College.

Doctor Allen is survived by his wife, Mrs. Mary S. Allen, and a son, Charles M. ("Chuck") Allen. "Chuck" Allen is twenty-one years of age and is now attending the University of Minnesota. He was a B-17 pilot during the war and was shot down over Germany. He was a prisoner of war for almost one year, and there was a long period of time when Dr. Allen did not hear from him. It was a source of comfort to his friends that Doctor Allen survived long enough to see "Chuck" back in good health and reasonably settled as far as his life work was concerned.

"He cures most in whom most are confident."

David P. Anderson, M.D.

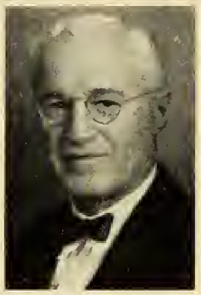
HENRY O. GRANGAARD

Dr. Henry O. Grangaard of Proctor, Minnesota, died recently of a heart attack in Jamestown, North Dakota. Born in Kindred, North Dakota, February 24, 1882, Dr. Grangaard graduated from Luther College, Decorah, Iowa, in 1902 with a B.A. degree, and from the University of Minnesota Medical School in 1908.

He practiced at Newark, Illinois, from 1908 to 1910; at Douglas, North Dakota, from 1910 to 1922, and at Ryder, North Dakota, from 1922 to 1943. In 1943 he moved to Proctor, St. Louis County, where he was on the medical staff of the State Hospital.

HAROLD E. ROBERTSON

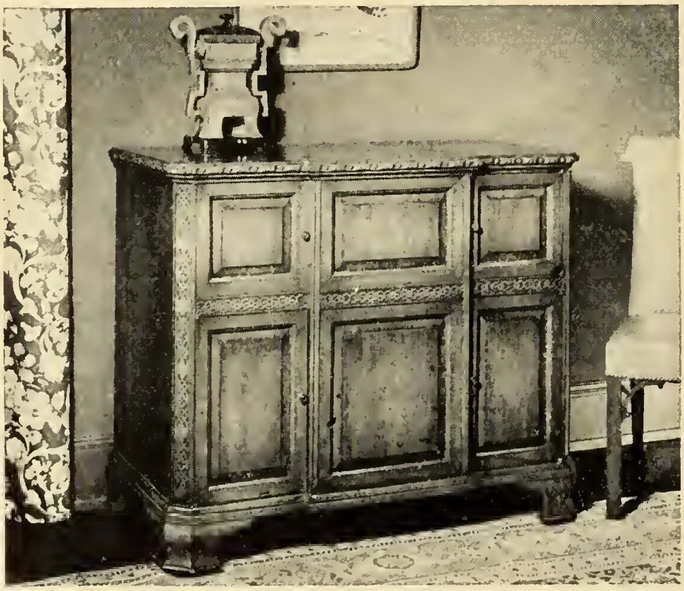
Dr. Harold E. Robertson, Senior Consultant of the Section on Pathologic Anatomy of the Mayo Clinic, died March 8, 1946, after a brief illness.



Dr. Robertson was born October 8, 1878, at Waseca, Minnesota. He received the degree of B.A. in 1899 from Carleton College, Northfield, and of M.D. in 1905 from the University of Pennsylvania. He was an intern at the University of Pennsylvania Hospital for four months and was an assistant to Dr. Richard Pearce at Albany, New York, and an instructor in pathology at Albany Medical College, from 1905 to 1906. He was assistant pathologist, Boston City Hospital, from 1906 to 1907 and was appointed an instructor in pathology in Harvard University. He came

(Continued on Page 512)

The *Capehart*



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HAROLD E. ROBERTSON

(Continued from Page 510)

to the University of Minnesota Medical School in 1907 as instructor in pathology and bacteriology. He became assistant professor of pathology and bacteriology in the university in 1909 and associate professor in 1910, and was professor of pathology there from 1914 to 1921. He was also director of the Department of Pathology, Bacteriology and Public Health at the University of Minnesota Medical School from 1917 to 1921. He took courses in pathology at the University of Berlin and the University of Freiburg in 1914 and 1915.

From 1917 to 1919 Dr. Robertson was a major in the Medical Corps of the American Expeditionary Force. During this service he was stationed at Army Laboratory I for six months, and at the Central Medical Department Laboratory at Dijon for six months and was consulting pathologist in the district of Paris for six months.

He entered the Mayo Clinic as head of the Section on Pathologic Anatomy July 1, 1921, at which time he was transferred as professor of pathology from the University of Minnesota Medical School to the Mayo Foundation. He held these positions until October 1, 1943, when he became a senior consultant in the same section at the clinic.

On July 31, 1907, he was married to Edith Ellam who survives him.

Dr. Robertson was a fellow of the American College of Physicians; a member of the American Society for the Control of Cancer, the Minnesota Academy of Medicine, the American Association of Pathologists and Bacteriologists (past president), the American Medical Association, the International Association of Medical Museums, the Alumni Association of The Mayo Foundation, Sigma Xi, Phi Beta Kappa, and Alpha Omega Alpha. He was a member of the Board of Directors of the American Society for the Control of Cancer.

CHESTER A. STEWART

Dr. Chester A. Stewart, formerly of Minneapolis, but since 1941 Director of the Pediatric Department of the Louisiana State University Medical School, died recently in New Orleans.

Born in Hannibal, Missouri, November 6, 1890, Dr. Stewart attended the University of Missouri at Columbia, Missouri, from which he received the degrees of A.B., A.M., and Ph.D. His medical degree was obtained from the University of Minnesota in 1920. After interning at the Gillette State Hospital, Saint Paul, Minnesota, he took five years of postgraduate work in anatomy and pediatrics at the University of Minnesota and the Mayo Foundation. He was a member of Sigma Xi.

While living in Minneapolis, Dr. Stewart was Clinical

(Continued on Page 514)

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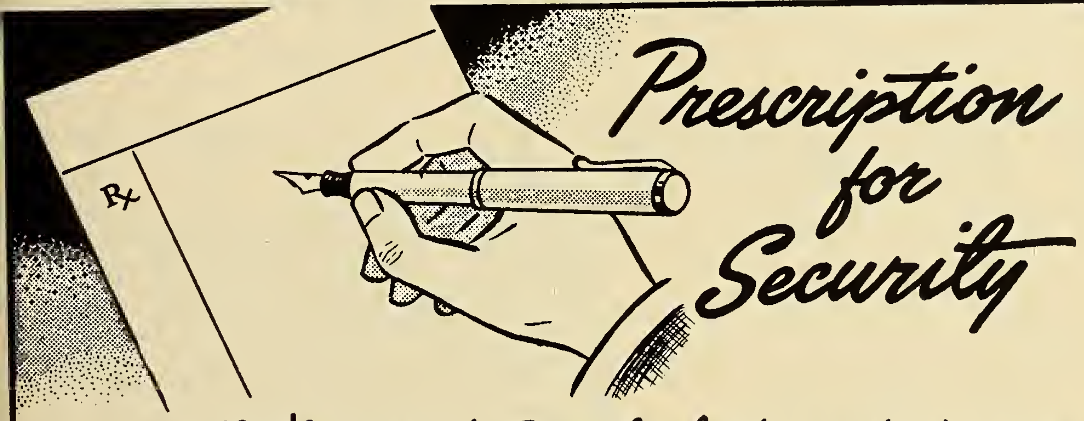

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CHESTER A. STEWART

(Continued from Page 512)

Professor of Pediatrics and Director of the Pediatric Out-Patient Department of the University of Minnesota Medical School, and Consultant at the Lymanhurst Health Center. He was a former president of the Hennepin County Medical Society and a Councilor for the Sixth District of the Minnesota State Medical Association. He was chosen as a delegate to the Fourth International Congress of Pediatrics at Rome in 1937, and also served as a member of the White House Conference on Child Health and Protection. A member of the National Tuberculosis Association's committee on diagnostic standards, he was much interested in the control of tuberculosis and the plan of county accreditation in tuberculosis work in the state. He returned to Minneapolis upon invitation in May, 1942, to be the principal speaker at the Olmsted County accreditation ceremonies.

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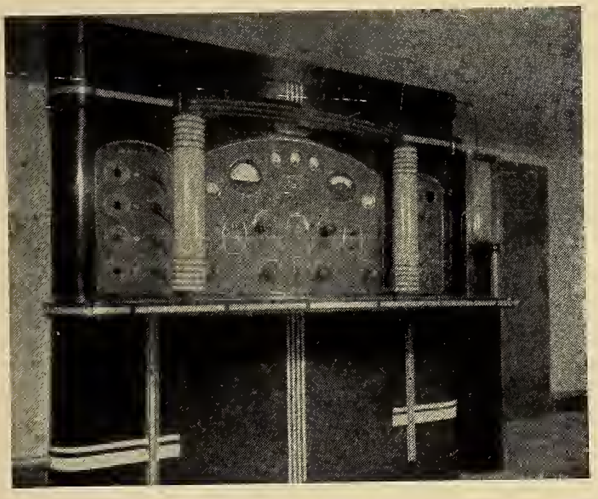

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Edward Schons, M.D., Director **J. P. Medelman, M.D.,** Associate Director

Of General Interest

Dr. Robert W. Merrill has been discharged from the Navy and has re-opened his office in Morris.

* * *

Dr. Thomas Magath, of the Mayo Clinic, presented a paper on "Diseases of International Importance" at the April meeting of the Medical Forum in Saint Paul.

* * *

Dr. Wayne C. Canfield, of Houston, is now associated in the practice of medicine and surgery with Dr. George M. Ruggles, of Forest Lake.

* * *

Dr. Canfield, who was recently discharged from the Transportation Corps, with duty in New Orleans and San Francisco, has been practicing for fifteen years.

* * *

Dr. George A. Sather, Fosston, is one of the board of seven men selected to formulate plans for a large new hospital for Fosston, which is expected to be accredited under the Blue Cross plan.

* * *

Dr. George L. Joyce has returned to his practice in Rochester after two and a half years in military service. As a commander in the Navy, Dr. Joyce was on duty in Chicago, Biak and the Admiralty Islands.

* * *

The Board of Regents of the University of Minnesota has announced the appointment of Dr. Richard V. Ebert to an associate professorship in medicine. Dr. Ebert will be engaged in both teaching and research.

* * *

Colonel Harry P. Harper, a fellow in surgery at the Mayo Foundation from 1940 to 1941, has been granted the Legion of Merit award for his work in establishing the first field hospital across the Rhine.

* * *

Dr. Thomas Ziskin has resumed the practice of internal medicine with offices in the Medical Arts Building. Dr. Ziskin, a major in the Army, entered service in April, 1944, when he was assigned to the Veterans Hospital in Minneapolis.

* * *

Crow Wing County was represented at the midwinter Commencement Exercises at the University of Minnesota by Harold D. Kletschka, Lake Hubert, and Alice Marie Lund, of Pequot Lakes. Both received Bachelor of Science Degrees from the School of Medicine.

* * *

Dr. J. T. Anderson, of Chisholm, has taken over the practice of Dr. Frank M. Petkevich at Red Lake Falls. Dr. Anderson was recently discharged from the Navy where he was a lieutenant commander. He is a graduate of the University of Minnesota Medical School.

* * *

Minnesota was represented in the medical graduates at the commencement exercises of Northwestern University on March 15 by John P. Utz, of Rochester. Dr. Utz began his internship at the Massachusetts Memorial Hospital on April 1.

* * *

Dr. Malcolm Mollison, son of A. E. Mollison, of Faribault, who received his doctor's degree from the Oklahoma University School of Medicine, has been appointed to an internship at St. Joseph's Hospital in Saint Paul.

* * *

Dr. Harold T. Gustafson has returned from two and a half years in the Navy and has re-opened his office in the La Salle Building in Minneapolis. With the rank of commander, Dr. Gustafson was head of surgery on the AP'AH *Joseph T. Dickman* for the past year.

* * *

Dr. John J. Bittner, who holds the George Chase Christian Professorship of Cancer Biology at the University of Minnesota Medical School, was elected vice president of the American Association for Cancer Research at the recent meeting held at Atlantic City.

* * *

Dr. Archibald H. Logan, a staff member of the Mayo Clinic for over thirty-five years, has been retired from active service, having reached retirement age. Dr. Logan, who has been head of a section in medicine since 1911, joined the Clinic on January 1, 1910.

* * *

Dr. C. F. Anderson, of Cloquet, has joined Dr. Roman V. Fait and Dr. Douglas L. Johnson in the practice of medicine at Little Falls. A graduate of the University of Minnesota Medical School, Dr. Anderson was only recently discharged from military service.

* * *

Dr. and Mrs. Myron Lysne and children have returned to their home in Robbinsdale from Oklahoma City, Oklahoma, where Dr. Lysne was stationed at Will Rogers Field. A major in the Army Medical Corps, Dr. Lysne was in service for four years.

* * *

Dr. E. G. Howard, who closed his office in Mapleton more than two years ago when he was inducted into the Navy, has returned home and is again in practice. A lieutenant commander, Dr. Howard served on an LST in the Atlantic and an AKA in the Pacific.

* * *

Dr. Thomas J. Dry has returned to his position on the staff of the Mayo Clinic from three and a half years of military service. A lieutenant in the Army Medical Corps, Dr. Dry was stationed at Camp Carson, Colorado Springs, Colorado.

* * *

Dr. Thomas J. Kinsella was made president of the Minneapolis Society of Surgeons at a recent meeting. Other officers elected were: Dr. Carl Rice, vice pres-

(Continued on Page 518)

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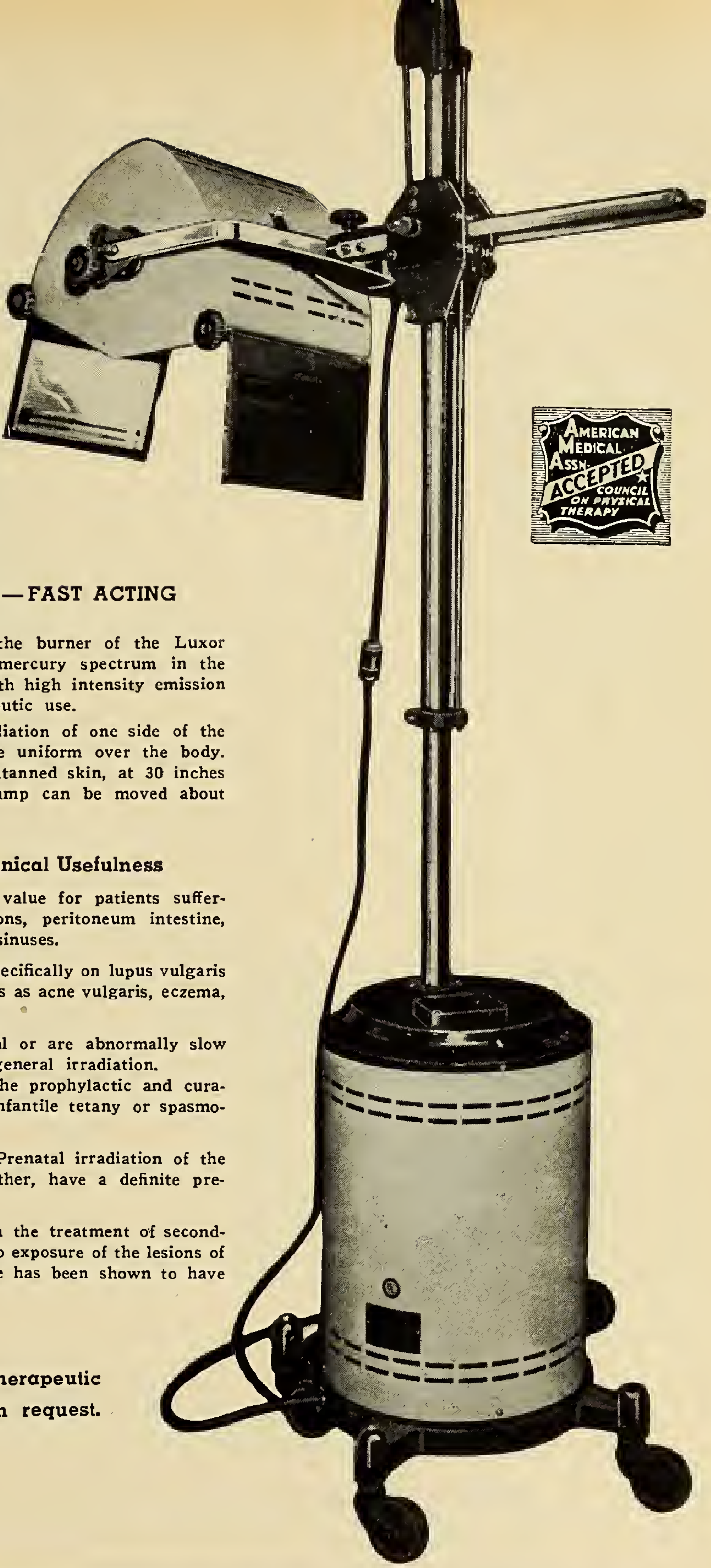

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(Continued from Page 516)

ident; Dr. Edwin R. Anderson, secretary; Dr. Hamlin Mattson, recorder, and Dr. Haynes Fowler and Dr. John Payne, members of the board of directors.

* * *

According to an announcement issued by Dr. William A. O'Brien, Director of Public Health Study at the University of Minnesota, Minnesota had a lower pneumonia and influenza rate during January and February than any other area in the United States.

* * *

Announcement has been made of the appointment of Dr. J. Emery Frank, of Marshall, as a Veterans Administration physician for the area. Until his release several months ago, Dr. Frank was a flight surgeon in the Army Air Corps.

* * *

For the first election in thirty-six years, Dr. John Crewe, Stewartville, will not be a candidate for coroner of Olmstead County, an office in which he has succeeded himself consecutively every four years since he was first elected on January 1, 1911. Ill health is Dr. Crewe's reason for declining to file.

* * *

Dr. Hermanus De Boer, of Edgerton, whose illness was at first reported as serious, is now improving steadily. He is able to be up and around his home for most of the day and he is generally free from pain. Dr. De Boer has been in continuous practice in Edgerton for the past forty years.

* * *

Dr. R. J. Mattich, who recently completed his interneship at St. Mary's Hospital in Duluth, has joined the staff of the Mesaba Clinic Hospital in Chisholm, and expects to remain there until called into military service. Dr. Mattich comes from Pringar, Iowa, and he is a graduate of the University of Iowa Medical School.

* * *

Dr. Arthur M. Mulligan has returned to Brainerd from postgraduate study at the University of Nebraska and has re-opened his offices for the practice of medicine and surgery. Dr. Mulligan was a member of the Army Medical Corps for five years and served forty-two months in the Pacific Theatre.

Dr. Stanley T. Kucera, of Lonsdale, is erecting a modern brick building in Northfield, where he will be associated in practice with Dr. Ariel E. Nielsen, of Northfield. Dr. Kucera, who is prominent in Rice County Medical activities, is a member of the staff of the Northfield Hospital.

* * *

Dr. Robert J. Richardson, formerly of Rushford, has opened offices for general practice at 2395 University Avenue, Saint Paul. Dr. Richardson was only recently released from the Army after four and a half years in service. A captain, he was on duty with the Sixth Infantry Division in the Pacific. He is a graduate of the University of Minnesota Medical School, Class of 1938.

* * *

Discharged last February after forty-two months of military service, Dr. Frederick D. Roth has resumed his practice in Lewiston. A captain in the army, Dr. Roth's assignments included duty at the Central Flying Training Command at Randolph Field, Texas, and two and a half years with the British Flying Training School at Miami, Oklahoma.

* * *

Dr. John M. Grogan, who was recently discharged from military service, has located in Ceylon. Following his graduation from the University of Minnesota Medical School, Dr. Grogan served his internship in Kansas City, Missouri. From there he was inducted into the Army, where he served for two years. Dr. Grogan is the son of Dr. John S. Grogan, of Wadena.

* * *

Dr. William H. Bickel and Dr. J. Grafton Love, of the Mayo Clinic, presented papers at the sectional meeting of the American College of Surgeons held in Salt Lake City. Dr. Bickel's subject was "Plantar Neuromas," and Dr. Love discussed "Present Status of Intervertebral Disks." During the same week Dr. Bickel attended the sectional meeting in Portland, where he spoke on "Cup Arthoplasty of the Hips."

* * *

Following his discharge from military service on March 4, Dr. Charles Anderson, of Duluth, joined the staff of Shipman Hospital at Ely. Out of four years of duty, Dr. Anderson spent twenty-one months in New

(Continued on Page 520)

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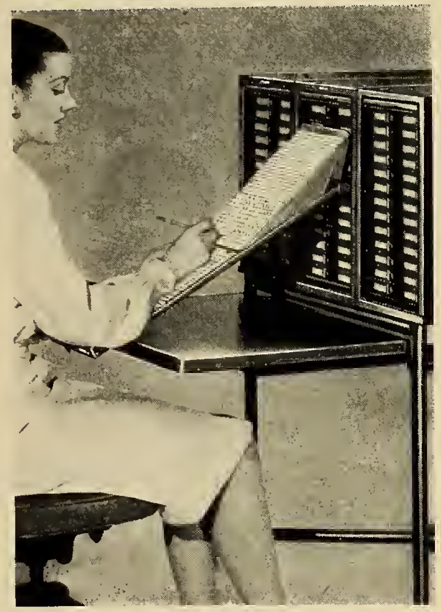

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One-week personal course in Vaginal Approach to Pelvic Surgery, starting June 10 and September 16.

OBSTETRICS—Two-week intensive course, starting September 9.

MEDICINE—Two-week intensive course, starting May 13 and June 17.

ELECTROCARDIOGRAPHY AND HEART DISEASE—Two-week intensive course, starting August 5.

GASTROSCOPY AND GASTROENTEROLOGY—Two-week personal course, June 3.

DERMATOLOGY AND SYPHILOLOGY—Two-week course, starting May 20.

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(Continued from Page 518)

Guinea and the Philippines. He is a graduate of th University of Minnesota, 1939, and was associated wit the Webber Hospital in Duluth for two years prior t his induction into the armed forces.

* * *

Dr. Richard B. Hullsiek, Saint Paul, has been appointed chief medical officer for the Veterans Administration regional office. Dr. Hullsiek, a veteran of bot World Wars, graduated from the University of Minnesota Medical School in 1924. During World War II he was a colonel in the Army Medical Corps and serve with the 307th Station Hospital in England and with th Third and Ninth Armies on the Continent.

* * *

Changes which had been made in the plans for th Mayo Memorial at the University of Minnesota hav increased building costs from the 55c per cubic foo estimated in 1945 to 90c per cubic foot. The committe is now studying a proposal to increase the building t twenty stories instead of the twelve of the original plans Although announced as a $2,000,000 project, it is mor than likely that additional funds will be required.

* * *

Dr. Joseph E. Murphy has returned to his practic in Marshall, where he is associated with Dr. Wilbert W Yaeger and Robert Bruce Patterson. With the rank o major, Dr. Murphy was in service for three and a hal years. His assignments included duty at the 91st General Hospital at Oxford, England, where he was orthopaedic Surgeon, and at the hospital in Liege, where h was head of the orthopedic section. Dr. Murphy intend to continue specializing in orthopedics.

* * *

After forty-two months of service in the Army Medical Corps with the rank of major, Dr. Ludolf J. Hoyer is back in practice in Windom. Most of Dr. Hoyer's duty was at Camp Beale, California, where he was assigned to field and general hospitals and also served as an assistant depot surgeon. An account of a special research project in the acceleration of healing in bone fractures, which Dr. Hoyer completed while at Camp Beale, was recently published.

* * *

Three Owatonna men received degrees from the School of Medicine at the midwinter quarter Commencement Exercises. They are:

Harold Richardson, who graduated *magna cum laude.* He has been made an assistant at the Medical School for the year, while he studies for his Master's Degree.

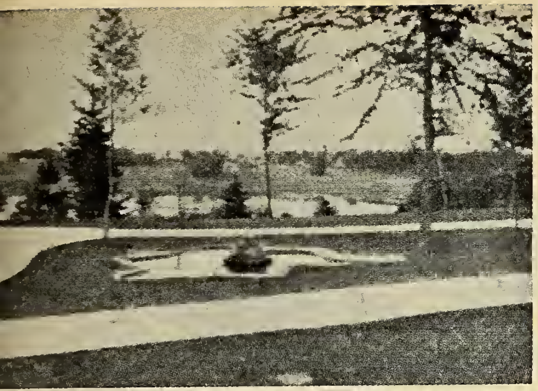
John Joseph Stransky, a Bachelor of Science Degree.

Francis Wierbinski, a Doctor's Degree. He has been appointed to an internship at Miller Hospital in Saint Paul.

* * *

Ten physicians and twenty interns have been appointed to the staff of the Minneapolis General Hospital to replace a corresponding number who were called to

(Continued on Page 522)



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(Continued from Page 520)

military service, according to Dr. Donald W. Pollard, superintendent of the hospital.

Among those entering the Army are Drs. Paul H. Ober, Charles S. Christiansen, Harry L. Berge, Walter P. Eder, Robert W. Goltz, Wayne D. LeBien, Robert D. Semsch, Arthur C. Wohlrabe and William M. Fergal. Dr. Robert G. Bronson is scheduled for Navy service.

* * *

Dr. Gerrit Beckering, who was discharged from the Army in April, has purchased the practice and office equipment, in Edgerton, of Dr. Hermanus De Boer who has retired because of ill health. Dr. Beckering will also be associated with the Ashton Memorial Hospital.

A native of the community, Dr. Beckering went from the Edgerton High School to Northwestern University, where he took his medical degree in 1929. He was in practice in Chicago until 1936 when he returned to Edgerton. He was inducted into military service in August, 1943.

* * *

Dr. Waldemar T. Wenner, of St. Cloud, has announced an association with Dr. Emmett N. Milhaupt, formerly of Toledo, Ohio. A graduate of the University of Wisconsin Medical School, Dr. Milhaupt is an eye, ear, nose and throat specialist. He served his internship in Milwaukee and was in general practice in Wisconsin for two and a half years.

Dr. Milhaupt has been awarded a three-year fellowship in eye, ear, nose and throat specialization at the University of Minnesota with a Master's Degree in otolaryngology. He is a member of the American Board of Otolaryngology.

* * *

Dr. Paul R. Hawley, Chief Medical Director of the Veterans Administration, Washington, D. C., has announced the appointment of Dr. Albert M. Snell, of the Mayo Clinic, as chief of the gastro-enterology section, professional services division of the Veterans Administration. At the same time, Dr. Hawley was made part-time chief of sections in medicine, cardiology, allergy and otolaryngology.

Dr. Snell is a member of the teaching staff of the Mayo Clinic. He is a diplomate in internal medicine and was formerly president of the Central Society of Clinical Research.

* * *

Ramsey County Medical Society has announced the return to practice of the following Saint Paul physicians; Colonel Edward P. Burch, Hamm Building: Lt. Commander J. Willard Edwards, Lowry Medical Arts Building: Captain Emmett V. Kenefick, Lowry Medical Arts Bldg.; Lt. Commander Ralph L. Olsen, 856 University Avenue; Dr. Robert M. Ramsay, squadron leader in the Canadian Army, Hamm Building; Major Paul F. W. Rick, 1910 Pinehurst Avenue; Captain Francis M. Walsh, Lowry Medical Arts Building; Major Hyman J. Wolkoff, 1075 Hudson Road; and Captain Cyril R. Tifft, who has opened offices at 823 East Seventh Street. All the physicians listed are on terminal leave.

(Continued on Page 524)

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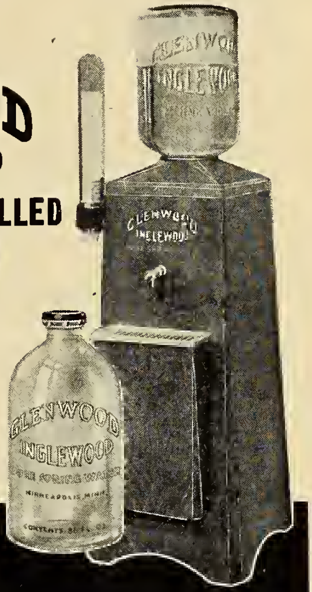

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Dr. William O'Brien, Director of Postgraduate Medical Education at the University of Minnesota, was re-elected president of the Minnesota Cancer Society at the annual meeting of the board. Other officers elected were: Dr. Henry B. Clark, Jr., and Dr. Arthur H. Wells, Duluth, vice presidents; Cleon Headley, Saint Paul, second vice president; Mrs. T. M. Olson, Elk River, commander of the cancer field army; Mrs. George W. Lawson, Saint Paul, secretary, and Louis Hill, Jr., Saint Paul, treasurer.

James H. Baker, executive secretary of the Hennepin County Medical Society and Mrs. M. A. Hessian, Minneapolis, were elected members of the executive committee.

* * *

The Hennepin County Medical Society reports the return to practice of the following Minneapolis physicians:

Dr. Martin Aune, eye, ear, nose and throat specialtist, has offices in the La Salle Building. Dr. Aune served as medical director of the Twin Cities Ordnance Plan for fifty-six months.

Dr. Alfred N. Bessesen, Jr., has resumed general practice in his offices in the Medical Arts Building. A commander in the Navy, Dr. Bessesen was inducted in September, 1943, and served at the Great Lakes Naval Hospital, Oakland Naval Hospital, and with a fleet hospital in the Philippines.

Dr. George C. Brutsch has re-opened his offices at 2550 Bloomington Avenue. With the rank of major, Dr. Brutsch served thirty months with an ordnance battalion in the ETO.

Dr. Raymond W. Dowidat has returned to his offices at 620 West Sixty-sixth Street, after almost four years of service. A captain in the Army Medical Corps, he was battalion surgeon with the 43rd Division in the Solomons, New Guinea, the Philippines and Japan.

Dr. Vernon L. Hart has resumed the practice of orthopedics in his offices in the Medical Arts Building. A lieutenant colonel, Dr. Hart entered the army in April, 1942, and served at Fitzsimons General Hospital and as orthopedic consultant for the Seventh Service Command at Camp Carson, Colorado.

Dr. Conrad J. Holmberg has resumed his practice in diseases of the eye, ear, nose and throat, with offices in the Medical Arts Building. Dr. Holmberg, a lieutenant colonel, entered the Army in February, 1942, and served overseas for forty months in New Caledonia, Okinawa and Korea with the 31st Station Hospital.

Dr. Harry A. Johnson has re-opened his offices in the La Salle Building. A commander in the Navy, Dr. Johnson was inducted in May, 1943. He was assigned to an LST in the Pacific for a year and participated in five invasions.

Dr. Abraham B. Litman has resumed his practice at 333 East Hennepin Avenue. Dr. Litman has been in service since September, 1942. With the rank of captain he was on duty at station hospitals in Los Angeles and Ft. Missoula, Montana, and with a hospital train.

Dr. Stanley W. Lundblad has returned to his offices the Medical Arts Building. A major in the Army, Dr. ındblad entered service in February, 1942, and served r forty months with the 31st Station Hospital in New ledonia, Okinawa and Korea.

Dr. William P. Sadler has re-opened his offices for e practice of obstetrics and gynecology in the Medical rts Building. A commander in the Navy, Dr. Sadler as assigned to a Naval Hospital in this country in ay, 1942, and later was staff officer for a service uadron in the Pacific.

Dr. Bernard I. Saliterman has resumed the practice of stetrics and gynecology in his offices in the La Salle ıilding. Dr. Saliterman entered the Army in July, 43, and with the rank of captain served with the 71st vacuation Hospital in New Guinea and the United ates.

Dr. Desmond M. Thysell has re-opened his offices for neral practice at 354 Thirteenth Avenue N. E. Dr. nysell entered service in July, 1943, and was battalion rgeon with a Marine combat unit in the South Pacific.

* * *

HOSPITAL NEWS

At the expiration of his terminal leave from the Navy, r. Ralph Rossen will return to his duties as superin- ndent of the Hastings State Hospital. Dr. Rossen ined the Navy in May, 1943, and with the rank of lieu- nant commander was in charge of the Division of ectro-encephalography at the U. S. Naval Hospital at ortsmouth, Virginia.

A graduate of the University of Minnesota, Dr. Rosen widely known as one of the co-developers of the Kabat-Rossen-Anderson apparatus for the treatment of schizophrenia, which was used by the Navy Submarine Division in the medical study of deep sea divers. He is a member of the American Board of Neurology and the American Board of Psychiatry.

* * *

Miss Patricia Streeter, R.N., of St. Cloud, who was recently discharged from the Army after eleven months of duty in the Philippines, is now associated with the Veterans Hospital in Minneapolis.

* * *

The offices of Olmsted County Public Health Nurses have been moved from the courthouse to the Rochester city hall. In commenting on the move, Dr. Floyd M. Feldman, city health officer, explained that it was done so that nurses of both the city and the county would be able to work as a single unit. The work will continue to be under the supervision of Miss Mildred Mouw.

* * *

Dr. Stella L. Wilkinson, formerly of Duluth, Minnesota, recently on the medical staff at the State hospital at Moose Lake, has transferred to Faribault, where she is a member of the Medical Staff of the State School and Colony.

* * *

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(Continued from Page 525)

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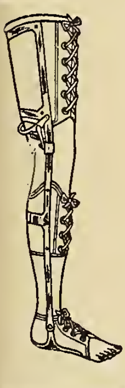

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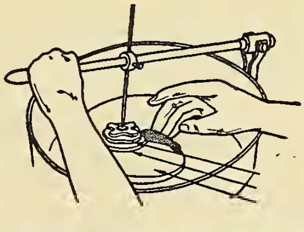

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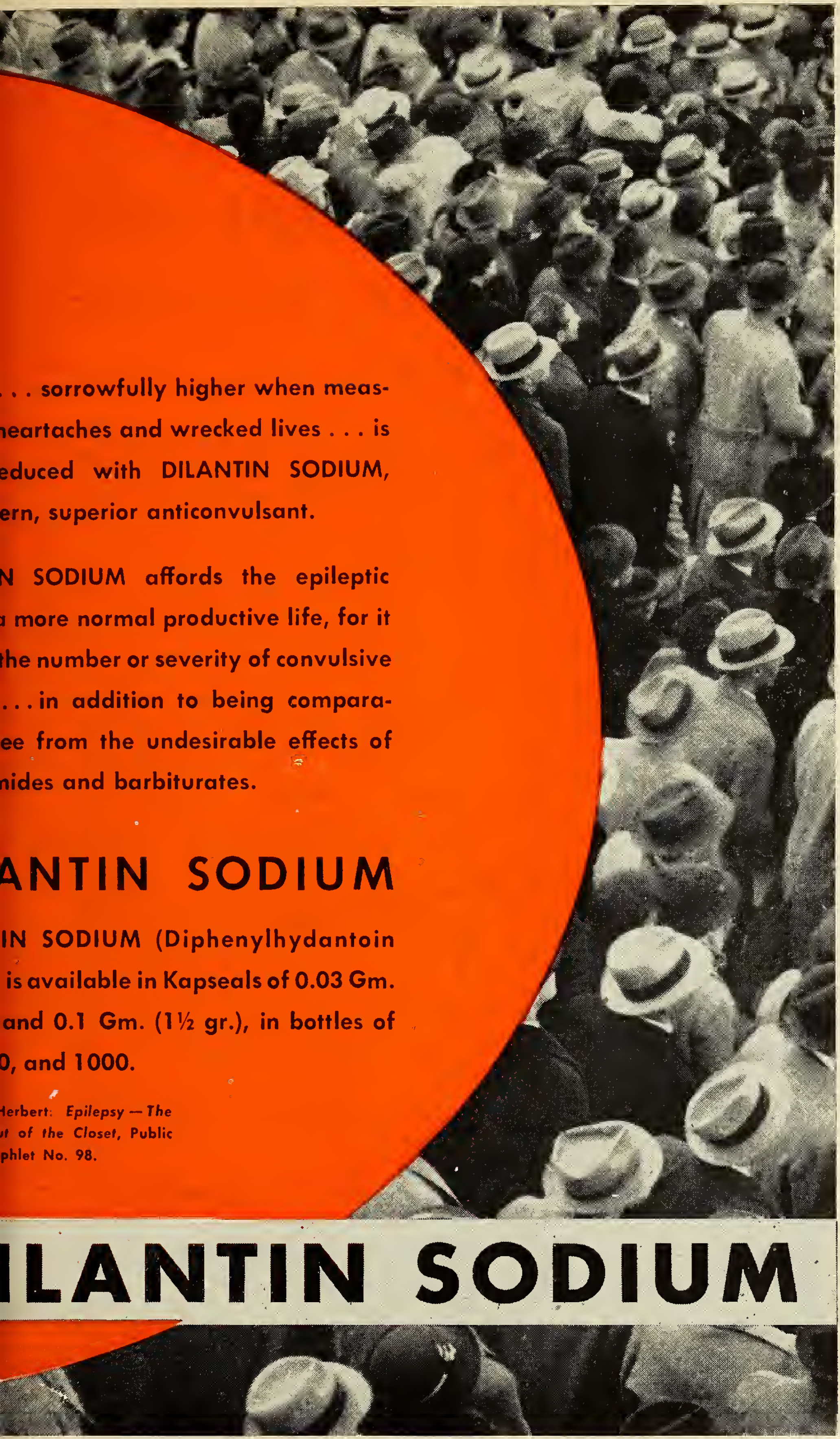

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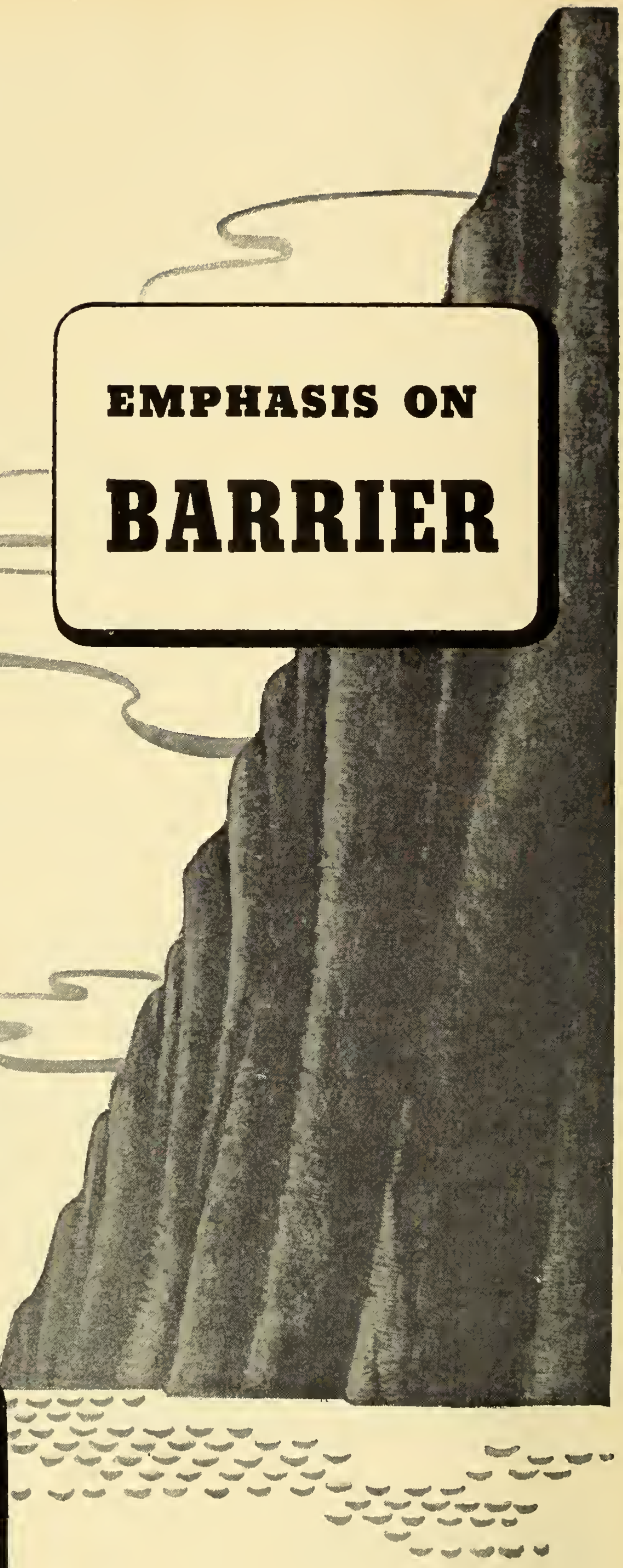

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1. Clinic Reports: Planned Parenthood Services in the United States. Human Fertility 10: 25 (Mar.) 1945.
2. Dickinson, R.L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
3. Warner, M.P.: J.A.M.A. 115: 279 (July 27) 1940.

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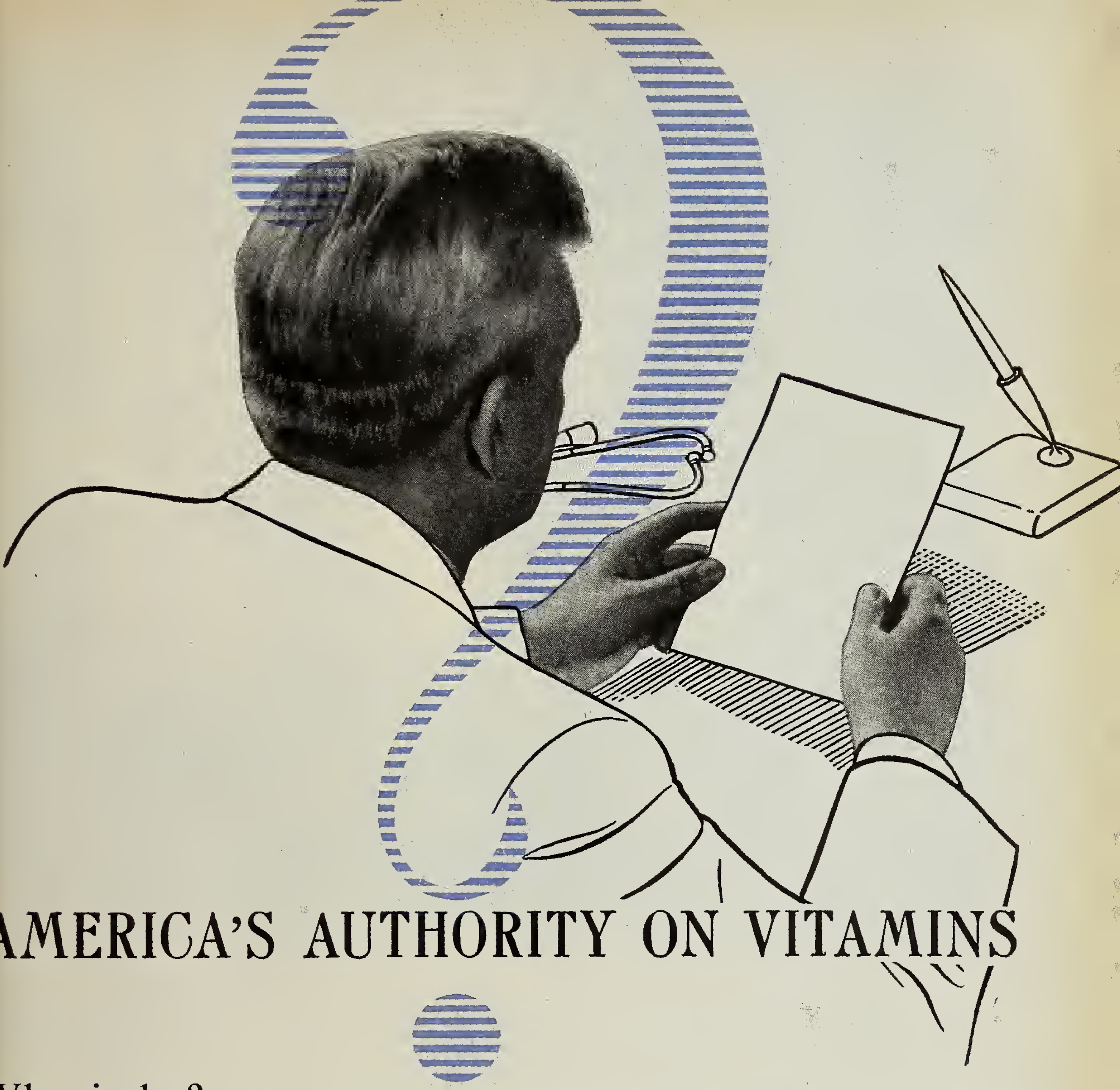

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60
Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.

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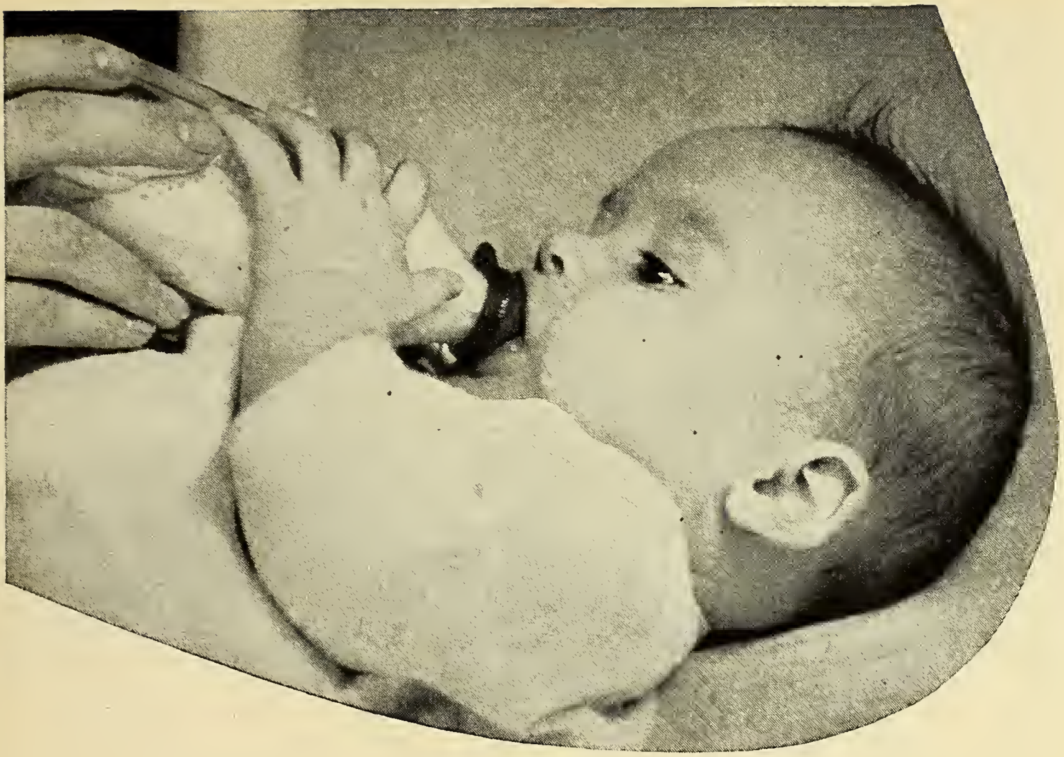

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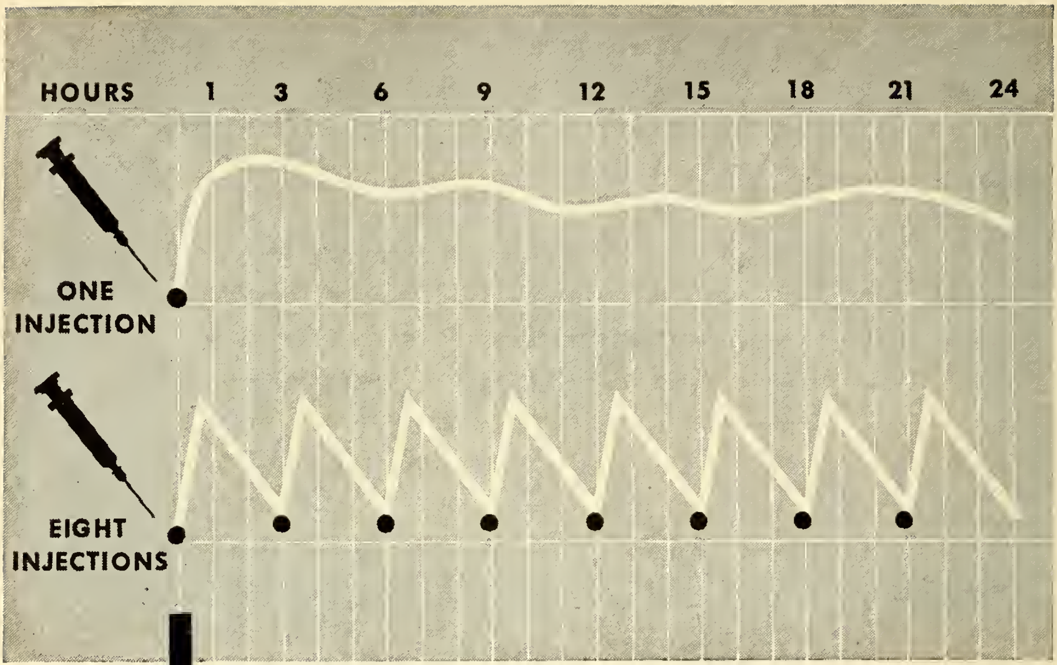

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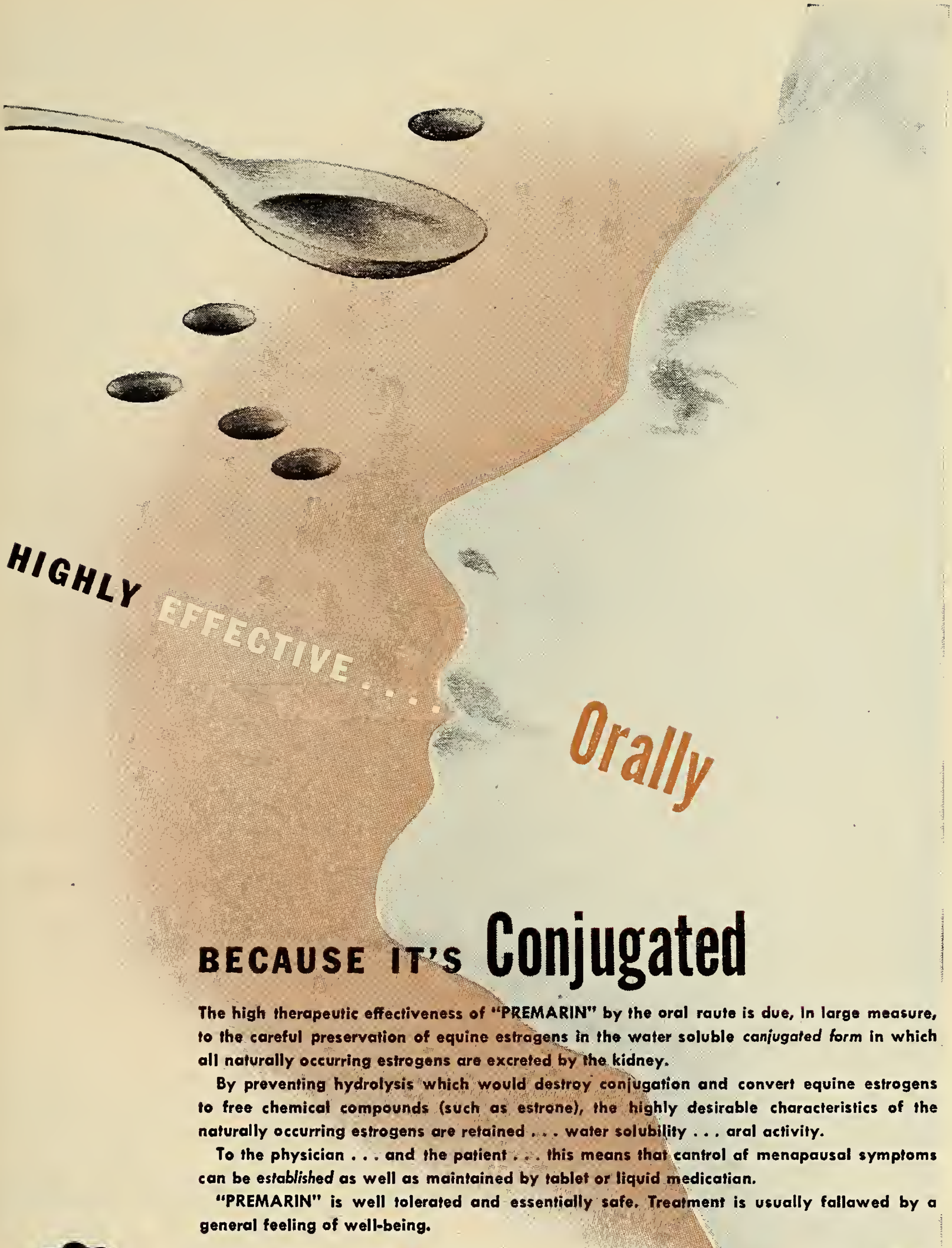

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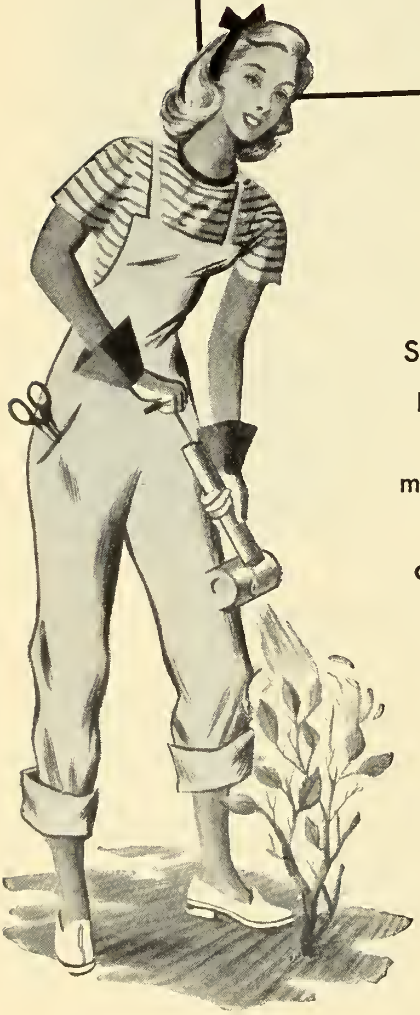

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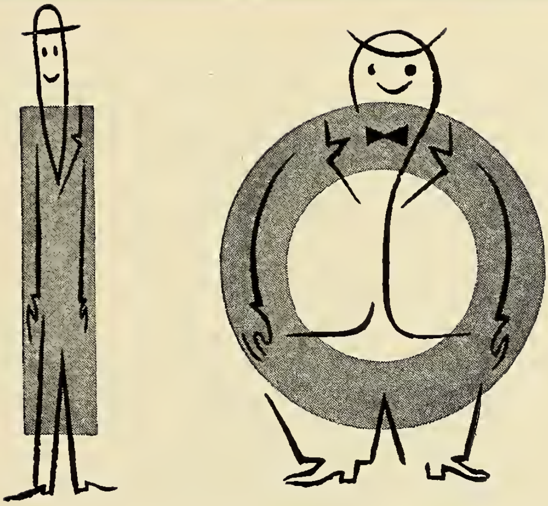

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[1] Handbook of Nutrition, Chicago A.M.A., 1943, p. 557.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 June, 1946 No. 6

THE TREATMENT OF PNEUMOCOCCIC AND STAPHYLOCOCCIC MENINGITIS WITH PENICILLIN AND SULFONAMIDES

Report of Twenty Cases

WENDELL H. HALL, M.D., JOHN ALDEN, M.B., GEORGIE M. BURT, M.D. and
WESLEY W. SPINK, M.D.
Minneapolis, Minnesota

THIS report is concerned with the results of treatment with penicillin in seventeen cases of pneumococcic meningitis and three cases of staphylococcic meningitis. While the number of cases is not large the results are quite encouraging when compared to those obtained before penicillin became available. However, an analysis of the present cases and a review of the literature indicates that pneumococcic meningitis is still a serious clinical problem.

Prior to the general use of the sulfonamides, recovery from pneumococcic meningitis was rarely encountered. Following the introduction of the sulfonamides, especially sulfapyridine, the mortality rate from this disease declined. But even after the completion of an evaluation of other sulfonamides, such as sulfadiazine, sulfathiazole and sulfamerazine, all utilized with and without specific antipneumococcic serum, the results have not been very encouraging. It would appear that the over-all case mortality rate of pneumococcic meningitis following treatment with the sulfonamides varies between 60 and 80 per cent. The former figure approximates the experience at the University of Minnesota Hospitals, while the latter reflects the results of Dingle and Finland[3] in Boston. The results with penicillin would indicate that the mortality rate is around 50 per cent.[7] A summary of 162 patients with pneumococcic meningitis treated with penicillin in different parts of the country reveals that eighty-eight patients died, giving a case mortality rate of 54.3 per cent (Table I). It is of signif-

TABLE I. SUMMARY OF RESULTS WITH PENICILLIN IN TREATMENT OF PNEUMOCOCCIC MENINGITIS AS RECORDED IN LITERATURE

Authors and Reference	No. Cases Treated	No. Deaths	Per cent Mortality Rate
1. A. J. Waring, Jr., and M. H. D. Smith J.A.M.A., 126:418, Oct. 14, 1944	12	1	8.3
2. C. G. Harford, S. P. Martin, P. O. Hageman, and W. B. Woods, Jr. J.A.M.A., 127:253, Feb. 3, 1945	9	1	11.
3. L. K. Sweet, E. Dumoff-Stanley, H. F. Dowling, and M. H. Lepper J.A.M.A., 127:263, Feb. 3, 1945	16	9	56.
4. W. L. White, F. D. Murphy, J. S. Lockwood, and H. F. Flippin Am. J. M. Sc., 210: 1, July, 1945	50	32	64.
5. E. Applebaum, and J. Nelson J.A.M.A., 128:278, July 14, 1945	67	41	61.
6. A. F. Hartman, F. M. Love, D. Wolff, and B. S. Kendall J. Ped., 27:115, Aug., 1945	8	4	50.
Total No. Cases	162	88	54.3

From the Division of Internal Medicine, University of Minnesota Hospitals and Medical School, Minneapolis.

The penicillin was provided by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for investigations recommended by the Committee on Chemotherapeutic and other Agents of the National Research Council.

Dr. Georgie M. Burt was formerly Resident Physician in Pediatrics, Abbott Hospital, Minneapolis.

TABLE II. SUMMARY OF SEVENTEEN PATIENTS WITH PNEUMOCOCCIC MENINGITIS TREATED WITH PENICILLIN

Patient No.	Age and Sex	Duration of Symtoms Prior to Therapy with Penicillin	Primary Focus	Type of Pneumococcus		Treatment Prior to Penicillin	Total Units of Penicillin		Simultaneous Sulfonamide Therapy	Number Days in Hospital	Result	COMMENT
				C.S.F.	Blood		Parenterally	Intrathecally				
1	47 yrs. Male	3 days	Pneumonia Otitis media	III	III	SD., SM.	2,355,000 in 27 days	235,000 in 14 days	SM.–51 grams in 11 days ST.–1 gram in 1 day	37	Recovery	No residual. Cerebrospinal fluid sterile 12 hours after first dose of penicillin.
2	60 yrs. Male	2 days	Otitis media	III	III		1,728,000 in 28 days	90,000 in 7 days	SM.–10 grams in 3 days ST.–2.6 grams in 4 days	56	Recovery	Slight residual weakness right side. Myringotomy day preceding therapy with penicillin. Mastoidectomy 1st day of penicillin therapy. 5th day therapy bronchopneumonia. 7th day evidence left temporoparietal brain abscess. 24th day craniotomy for subdural abscess. 39th day second craniotomy.
3	2½ mos. Female	4 days		V			271,000 in 12 days	69,000 in 12 days	SD.–14 grams in 14 days	14	Recovery	No residual. Temp. normal in 5 days.
4	4½ yrs. Male	4 days	Otitis media	V		SD. and myringotomy	397,000 in 15 days	75,000 in 7½ days	SD.–49 grams in 16 days	14	Recovery	Residual of marked hearing loss.
5	5½ yrs. Male	35 days	Otitis media	VI		SD.–181 grams in 32 days	652,000 in 10 days			42	Died	No penicillin intrathecally. Organisms persisted in cerebrospinal fluid. Autopsy—thick exudate base of brain; dilated 3rd ventricle; ventricles filled with purulent material; no gross abscesses; normal mastoids.
6	25 yrs. Female	7 days	Otitis media	VII		SD. for 7 days; myringotomy	590,000 in 10 days	100,000 in 5 days	SM.–58 grams in 11 days	17	Recovery	No residual. On entry to hospital stuporous (diabetic ketosis); mastoidectomy 5th day in hospital with coag. pos. staph. from exudate.
7	6 mos. Male	3 days	Pneumonia	XII	XII 2 cols. per c.c.	SM.	443,000 in 21 days	78,500 in 16 days	SM.–7 grams in 6 days	27	Recovery	No residual. Intrathecal block on 6th day of treatment necessitating 3 intracisternal injections of penicillin.
8	7 mos. Male	5 days	Otitis media	XII		SP., bilateral myringotomy	160,000 in 12 days	27,000 in 12 days		12	Recovery	No residual. Rise in cerebrospinal fluid cell count first 3 days of treatment. Convulsions 4th day. 3000 units intracisternally.
9	46 yrs. Female	2 days	Otitis media	XII	XII		520,000 in 2 days	50,000 in 2 days	SD.–19 grams in 2 days	2	Died	Failed to respond. Autopsy-purulent exudate in subarachnoid space; hemorrhagic pneumonia.
10	48 yrs. Male	4 days	Pneumonia	XII	XII	SD.	754,000 in 10 days	241,000 in 9 days	SD.–142 grams in 10 days	10	Died	Temporary improvement. Received penicillin intracisternally. Autopsy—mild meningitis base of brain; cerebrospinal fluid sterile.
11	5 mos. Male	15 days	Otitis media	XVIII		SD., SM., myringotomy	337,000 in 12 days	35,000 in 4 days	SD.–5.5 grams in 5 days	18	Recovery	No residual. Meningitis developed while patient receiving penicillin intramuscularly for otitis media. Mastoidectomy 1st day of therapy—culture sterile. Prompt response to penicillin intrathecally.
12	6 mos. Male	2 days		XIX	XIX 200–250 cols. per c.c.		672,000 in 22 days	30,000 in 7 days	SD.–26 grams in 16 days	36	Recovery	No residual.
13	57 yrs. Male	3 days	Pneumonia	XIX	XIX		885,000 in 10 days	140,000 in 9 days	SD.–170 grams in 18 days	28	Died	Death due endocarditis with rupture of aortic cusp; blood sterile; unresolved pneumonia rt. upper lobe; no evidence of meningitis.
14	7 mos. Female	2 days	Otitis media	XXI		SD.	486,000 in 21 days	54,000 in 17 days	SD.–47.75 grams in 20 days	41	Recovery	Severe residual cerebral damage. Probably diminution of vision and hearing.
15	30 yrs. Male	13 days		XXIII	XXIII	Sulfonamide for 15 days	6,514,000 in 58 days	340,000 in 26 days	SD.–293 grams in 35 days	44	Recovery	One month prior to entry treated for meningitis with penicillin intrathecally and intramuscularly (doses not known). One month later second relapse. Cerebrospinal fluid sterile. Evidence of encephalitis. Third relapse. Biopsy of rt. and left parietal lobes of brain showed encephalitis. Complete recovery with no neurologic residual.
16	58 yrs. Female	3 days	Otitis media	XXXII	XXXII 83 cols. per c.c.		872,500 in 14 days	120,000 in 5 days		22	Recovery	No residual. Myringotomy 2nd day penicillin therapy.
17	10 yrs. Male	35 days	Skull fracture through sinus	XXXIII		SD. and ST. for 29 days	912,300 in 28 days		SP.–21.5 grams in 13 days SD.–13.75 grams in 5 days	17	Recovery	No residual. Improvement following SD. Also received 100,000 units type XXXIII antipneumococcic rabbit serum intravenously and intrathecally without definite improvement. Penicillin given parenterally without benefit. Operative drainage of sinuses followed by prompt improvement and recovery.

TABLE III. AGE DISTRIBUTION OF SEVENTEEN PATIENTS WITH PNEUMOCOCCIC MENINGITIS

Age	Pneumococcic Types	No. Cases	No. Died
0-12 mos.	V, XII, XVIII, XIX, XXI	6	0
1-5 yrs.	V	1	0
5-10 yrs.	VI	1	1
10-20 yrs.	XXXIII	1	0
20-50 yrs.	III, VII, XII, XXIII	5	2
50-70 yrs.	III, XIX, XXXII	3	1

icance that rates considerably lower than this were reported by two groups. Waring and Smith[20] in Baltimore treated twelve patients with penicillin and sulfadiazine or sulfapyrazine and had but one death. Four of the patients received specific antipneumococcic serum in addition but this apparently had little effect on the outcome. These outstanding results stand out in marked contrast to previous experience. Up to 1937, 179 cases of pneumococcic meningitis were treated at the Harriet Lane Home and Sydenham Hospital with a mortality rate of 100 per cent. When sulfanilamide became available, twenty-five patients were treated and twenty-three died. From 1938 to 1943 a total of sixty patients were given sulfapyridine, sulfadiazine or sulfathiazole with and without antipneumococcic serum, and the mortality rate was 58 per cent. They conclude with the recommendation that penicillin and sulfadiazine or sulfapyrazine should be utilized in the treatment of pneumococcic meningitis. Harford and his associates[6] in St. Louis treated nine patients with penicillin and reported but one death. They attribute this favorable outcome, in part, to the fact that five of the patients, in addition to receiving penicillin, had had mastoidectomies, which succeeded in eradicating the primary foci.

A less frequently encountered form of bacterial meningitis is that caused by staphylococci. Although the sulfonamides are less satisfactory antistaphylococcic agents than penicillin, there are several recorded instances of patients recovering from staphylococcic meningitis as a result of sulfonamide therapy, particularly following the use of sulfathiazole.[8,12,13,14,16] There are at least nine recorded recoveries from staphylococcic meningitis following the administration of penicillin.[9,10,18,19]

TABLE IV. PRIMARY FOCI IN SEVENTEEN PATIENTS WITH PNEUMOCOCCIC MENINGITIS

Focus	No. Cases
Otitis media	10
Pneumonia	3
Skull fracture through paranasal sinuses	1
Unknown	3

Pneumococcic Meningitis

In the present series of seventeen patients with pneumococcic meningitis there were thirteen who recovered and four who died giving a case mortality rate of 23.5 per cent. Although the total number of cases is not large there has been a significant reduction of the death rate from this disease associated with the administration of penicillin. A summary of the pertinent clinical data regarding these patients is shown in Table II.

Age Incidence.—The age distribution of the seventeen patients is given in Table III. It is of particular interest that there were six patients under twelve months of age and all of them recovered. There were three patients over fifty years of age with two recoveries. It is well established that pneumococcic meningitis is an extremely serious and frequently fatal disease in infants and in the aged. The present results indicate that penicillin is beneficial in these extremes of life.

Types of Pneumococci.—As seen in Table III no particular type of pneumococcus was predominant as the cause of meningitis.

Primary Foci.—The probable primary focus of infection was established in fourteen of the seventeen patients as shown in Table IV. Of the ten patients with otitis media, myringotomies were carried out in six individuals, all of whom recovered. Two of these six patients also had mastoidectomies. It is not unlikely that eradication of the primary foci in these individuals contributed to the recovery of the patients, a factor which has also been considered by others[6] in the treatment of patients with penicillin. Patient 2 (Table II) was a sixty-year-old patient under the care of Dr. Jay C. Davis of Minneapolis. He was desperately ill with a meningitis due to type III pneumococci, and it is very doubtful if therapy with penicillin would have resulted in a favorable outcome without radical surgical interference to remove purulent material, which included a myringotomy, mastoidectomy, and two craniotomies for a subdural abscess. Drainage of a primary focus was undoubtedly responsible for recovery in patient 17 (Table II), a patient of Dr. Ray Shannon of Saint Paul. The patient, a ten-year-old boy, developed meningitis due to type XXXIII pneumococci following a fracture of the skull. Roentgenograms revealed a fracture running diagonally upward from the region of the right ethmoid cells and along the medial wall of the right orbit into the right frontal bone for two inches. This patient was the first one of the seventeen patients to receive penicillin and the material was only given intravenously. In addition he received therapy with sulfonamides and type-specific antipneumococcic serum. Because his condition was not improving, on the forty-seventh day of his illness both antra were drained, as well as the sphenoid and ethmoid sinuses. All sinuses were apparently the site of suppuration and following drainage recovery was progressive.

Fatal Cases.—Patient 5 (Table II) was treated with penicillin through the co-operation of Dr. E. J. Huenekens of Minneapolis. He had received sulfadiazine for thirty-two days without improvement and then penicillin was administered intravenously over a period of ten days. No penicillin was injected directly into the subarachnoid space. His condition became progressively worse and he expired. Postmortem examination revealed a thick exudate involving the meninges of the brain. It is possible that penicillin given intrathecally would have caused a more favorable outcome. Patient 9 failed to respond to combined therapy with sulfadiazine, and penicillin administered intramuscularly and intrathecally. Patient 10 was treated similarly, except that penicillin was injected intracisternally, and experienced temporary improvement but death was precipitated by meningitis and a hemorrhagic pneumonia. Patient 13 had apparently recovered completely from meningitis and died of cardiac failure following rupture of an aortic cusp. This patient had an endocarditis although organisms were not recovered from the blood.

Residual Involvement of Central Nervous System.—Although it can be anticipated that more patients will recover from pneumococcic meningitis than prior to the introduction of penicillin, serious and permanent damage to the central nervous system may result. Two patients, at least, were left with marked diminution of hearing (Patients 4 and 14). In addition, patient 14 probably had some loss of vision. In spite of an extremely stormy clinical course, which included several operative procedures, patient 2 recovered with only a slight residual weakness of the right side of the body. Patient 15 had three relapses with what was at first considered to be meningitis but exploratory operation defined these relapses as being associated with an encephalitis. The patient finally recovered completely without any neurologic residual.

Treatment.—When penicillin first became available in this clinic for the treatment of pneumococcic meningitis it was not clearly established whether the drug passed the blood-brain barrier and appeared in the cerebrospinal fluid following intramuscular or intravenous administration. Therefore, the first two individuals (patients 5 and 17) did not receive intrathecal injections of penicillin. Subsequently, Rammelkamp and Keefer[13] observed that penicillin introduced intravenously into normal human beings did not pass the blood-brain barrier. Later, Rosenberg and Sylvester[14] reported that the intramuscular injection of penicillin in patients with meningococcic meningitis was followed by the appearance of appreciable quantities of penicillin in the cerebrospinal fluid. Rammelkamp and Keefer[12] pointed out that penicillin could be safely introduced intrathecally, such a procedure provoking only an increase in leukocytes in the cerebrospinal fluid and, occasionally, headaches. In the present study, after therapeutic failures had resulted with the first two cases, it appeared logical and desirable to administer penicillin intravenously or intramuscularly and also intrathecally. Early reports indicated that the treatment of patients having pneumococcic meningitis with penicillin alone left much to be desired. The case mortality rates still exceeded 50 per cent. In view of this, the policy established in this clinic was to administer both a sulfonamide and penicillin to patients with pneumococcic meningitis. Either sulfadiazine or sulfamerazine or their sodium salts were given orally or intravenously, and penicillin was injected intravenously or intramuscularly, and also into the subarachnoid space.

For adults, 10,000 Oxford units of penicillin were dissolved in sterile physiological saline solution and injected intrathecally after an equivalent amount or more of cerebrospinal fluid was withdrawn. This was repeated every twelve thours for the first few days, and then as improvement took place, injections were given every twenty-four hours. In the patients who recovered, and exclusive of patient 15, intrathecal therapy was carried out for an average of seven days. An initial dose of 50,000 to 75,000 units of penicillin was administered as an intravenous drip, which was followed by the intramuscular injections of 10,000 to 50,000 units every three hours. The duration of treatment with penicillin averaged twenty-one days with an average total of about 1,500,000 units given to the patients who recovered. It is to be noted again that patients 5 and 17 did not receive penicillin intrathecally and as a result neither patient manifested improvement. Sulfadiazine or sulfamerazine was given concurrently in doses which maintained a blood concentration around 10 mgs. per 100 c.c. One individual (patient 16) did not receive treatment with a sulfonamide, and she recovered.

In the infants and small children, from 3,000 to 5,000 units of penicillin were introduced intrathecally every twelve hours during the initial days of therapy, and then daily. The average period of intrathecal therapy was ten days. From 3,000 to 4,000 units of penicillin were given intramuscularly every three hours. The average total amount of penicillin utilized was 450,000 units which was administered over a period of sixteen to seventeen days. Sulfadiazine or sulfamerazine was employed as in the adults in doses which provided a blood concentration of 10 mgs. per 100 c.c.

There are some reports[11,14] in which the necessity of injecting penicillin intrathecally in the treatment of meningitis is questioned. While there is no doubt that penicillin will appear in the cerebrospinal fluid in patients with inflamed meninges when the drug is given intramusculary or intravenously, and that because of the extreme susceptibility of meningococci to penicillin, meningococcic meningitis may be treated without the direct introduction of penicillin into the subarachnoid space, the foregoing experience in this clinic indicates the desirability of using penicillin intrathecally in the treatment of pneumococcic meningitis. Experience with patient 11 illustrates in a dramatic fashion the value of giving penicillin intrathecally. The patient, a five-month-old male child, had otitis media on the left six weeks before entry to the hospital. Following treatment with sulfadiazine, the symptoms and fever promptly subsided. Two weeks later, otitis media recurred and he again appeared to respond quickly to therapy with sulfadiazine. Two weeks later, the same ear was again involved and a myringotomy revealed a purulent discharge. The infant did not respond satisfactorily to either sulfadiazine or sulfamerazine and hospitalization was advised. Treatment with penicillin was instituted, 5,000 units being given intramuscularly every three hours. However, the child failed to improve and on the third day of penicillin therapy there were signs of meningeal irritation and a lumbar puncture yielded type XVIII pneumococci. Then 5,000 units of penicillin were introduced into the subarachnoid space. Although a mastoidectomy was performed no evidence of infection was demonstrated. Following the initial intrathecal injection of penicillin there was prompt clinical improvement, and a culture of the cerebrospinal fluid twenty-four hours later remained sterile. Three more doses of 10,000 units each were given on the three succeeding days. The baby was also given sulfadiazine orally and penicillin intramuscularly. A total of 372,000 units of penicillin was utilized and the child made an uneventful recovery.

It has been of importance to determine whether the salts of penicillin have an irritative effect upon the central nervous system and the meninges. Walker and Johnson[19] observed that the application of commercial penicillin to the cerebral cortex of cats, dogs, monkeys and human beings produced convulsive manifestations. The convulsive and antibiotic factors appeared to be closely related. Sweet and his associates[18] report severe neurologic reactions following the intrathecal injection of penicillin in human patients with pneumococcic meningitis, but relatively high doses of penicillin were used. Likewise, a single instance has been reported by Siegal.[16] No untoward reactions followed the intrathecal injection of penicillin in this clinic, and this may be related to the fact that the doses of penicillin rarely exceeded 10,000 units daily or twice daily.

TABLE V. SUMMARY OF THREE PATIENTS WITH STAPHYLOCOCCIC MENINGITIS TREATED WITH PENICILLIN

Patient No.	Age and Sex	Duration of symptoms Prior to Therapy with Penicillin	Total Units of Penicillin		Simultaneous Sulfonamide Therapy	Number of Days in Hospital	Results	Comment
			Parenterally	Intrathecally				
1	3 weeks male	3 days	277,750 in 13 days	66,000 in 13 days	9 grams SD. in 18 days	42	Died	Primary focus was meningomyelocele. *Staphylococci* and *E. coli* in CSF. Former eradicated from CSF. but E. coli persisted. Autopsy—revealed bronchopneumonia and meningitis.
2	7 weeks male	5 days	161,000 in 20 days	38,000 in 19 days	19 grams ST. in 27 days; 1 gram SD. in 1 day	31	Recovery	No residual.
3	8 weeks male	2 days	967,000 in 54 days	120,000 in 32 days	44.5 grams SD. in 54 days	57	Recovery	No residual. Developed epidural abscess at site of lumbar intrathecal injections which was eradicated by local use of penicillin.

McCune and Evans[9] have pointed out that when penicillin is injected intrathecally in the lumbar region minimal amounts were found in the fluid of the ventricles two hours later, and have suggested that on some occasions it may be necessary to introduce penicillin directly into the ventricles. The results of White and his group[21] reveal a lower case mortality rate in pneumococcic meningitis when penicillin was introduced into a higher site than the lumbar region, and they have recommended that the penicillin should be given into the cisterna magna.

Summary

The following specific therapeutic recommendations are essentially those being carried out at the University of Minnesota Hospitals at the present time.

1. Adults. As soon as the diagnosis is established sulfadiazine or sulfamerazine is given orally or parenterally so that blood concentrations of at least 10 mgs. per 100 c.c. are quickly established and sustained. It is doubtful whether higher levels are necessary. Penicillin is given intramuscularly in doses of 20,000 units every two hours for the first twenty-four hours, and then the same dose is given every three hours. Penicillin therapy is continued until the temperature has remained normal for forty-eight hours and blood cultures remain sterile. Sulfonamide therapy is carried out for at least one week after all signs of the infection have abated and the cerebrospinal fluid is normal. Penicillin is injected every twenty-four hours intrathecally in the lumbar region employing 10,000 units in 10 c.c. of sterile physiologic saline solution. This penicillin solution is introduced immediately after the withdrawal of at least 10 c.c. of cerebrospinal fluid. Intrathecal therapy should be continued as long as organisms are present in the cerebrospinal fluid. If the fluid is sterile, intrathecal injections should be given as long as the fluid is cloudy or the concentration of sugar is diminished. In desperate situations it may be advisable to inject the penicillin into the cisterna magna.

2. Infants and Small Children. Essentially the same procedure is carried out, except that the doses of penicillin given intramuscularly are 5,000 units, and 2,500 to 5,000 units are injected intrathecally.

Staphylococcic Meningitis

Three patients with staphylococcic meningitis were treated with penicillin. They were male infants, three weeks, seven weeks and eight weeks of age. Two of three infants recovered completely. A summary of the clinical data on these patients is given in Table V. The one infant three weeks old that died had a meningomyelocele as a primary focus of infection. Staphylococci and *E. coli* were isolated from the cerebrospinal fluid. Following the parathecal and intrathecal use of penicillin and the oral administration of sulfadiazine, the staphylococci were eradicated from the cerebrospinal fluid but *E. coli* persisted until death. Postmortem examination revealed bronchopneumonia and purulent meningitis.

These infants were treated in practically the same manner as described for those having pneumococcic meningitis. However, it was necessary to administer daily up to 3,000 units of penicillin intrathecally for a longer period before the cerebrospinal fluid remained sterile. It is of interest that patient 3 developed an epidural abscess at the site of repeated lumbar punctures which was eradicated by the local instillation of penicillin.

It is recommended that staphylococcic meningitis be treated in the same manner as pneumococcic meningitis, that is, sulfadiazine and penicillin should be used systemically and penicillin should be injected intrathecally. That treatment with penicillin intrathecally is probably essential is borne out by the experimental observations of Pilcher and Meacham.[19] Experimental staphylococcic meningitis in dogs was not benefited by the intravenous use of penicillin, but the intrathecal injection of penicillin was followed by a mortality rate of 54 per cent as compared to 93 per cent in infected controls.

Comment

While treatment with penicillin and the sulfonamides has afforded a more favorable outlook for patients with suppurative meningitis, continued improvement in the case mortality rate and the ultimate outcome of the patient who recovers are dependent upon other factors. It is extremely important that a diagnosis should be established early in the course of the disease and that favorable facilities should be available for early treatment. If the initial examination of the cerebrospinal fluid reveals evidence of a suppurative involvement of the meninges, but precise bacteriologic information must await further study, one is justified in beginning treatment immediately. Following identification of the etiologic micro-organism, the course of treatment may be altered if necessary. Meticulous nursing care and supportive measures are stressed only because of their importance. The attending clinician should examine the patient at frequent intervals with particular attention to suppurative foci which may require surgical intervention for eradication. The state of the patient's hydration and nutrition should be evaluated and corrected when indicated. In conclusion, attention to the foregoing measures in treatment has contributed to the favorable outcome of the majority of patients reported at this time.

Summary

1. Seventeen patients with pneumococcic meningitis were treated with penicillin and thirteen recovered. Sixteen of the seventeen patients received both penicillin and sulfadiazine or sulfamerazine.

2. Three infants with staphylococcic meningitis were treated with a combination of penicillin and sulfonamides and two recovered.

3. It is recommended that in the treatment of suppurative meningitis due to pneumococci or staphylococci penicillin should be administered intravenously or intramuscularly and intrathecally. In addition, sulfadiazine or sulfamerazine should be given orally or parenterally, but not intrathecally.

4. The importance of early diagnosis, supportive treatment and eradication of suppurative foci are stressed.

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COMPOUND, COMMINUTED FRACTURES OF THE SKULL IN BATTLE CASUALTIES

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THE percentage of combat troops that die on the field of battle because of severe craniocerebral injury is not available at this time. Ascroft[1] has aptly stated that "The head wounds which are not immediately fatal are less lethal and crippling than is popularly believed, and the proportion of men who return to duty even after severe, penetrating injuries is much higher than was anticipated." Campbell[2] has reported his experience at an oversea center for treatment of injuries of the head on 100 consecutive battle casualties with compound, comminuted fractures of the skull. Of this group, five patients died of deep infection, twenty-three were returned to duty in the theater of operations and seventy-two were evacuated to the zone of the interior. The patients who had severe craniocerebral injuries and who were returned to the United States were usually received in a general hospital serving as a neurosurgical center. Here the definitive neurosurgical treatment and final disposition were completed. This report is based on seventy-two consecutive cases of injuries of the skull encountered at one such neurosurgical center (Lawson General Hospital) and perhaps the data are representative of the soldiers wounded in combat who are being received at other general hospitals in this country.

Only the soldiers who were actually injured in the field of battle and who sustained a compound, comminuted fracture of the skull were selected, so as to eliminate any disparity in the type and promptness of definitive surgical treatment. The first seventy-two patients who met these requirements were studied so that a final opinion could be reached with regard to end results by combining the data on them with the data on Campbell's original 100 patients, 72 per cent of whom were evacuated to the zone of the interior.

After the injured soldier had been admitted to the hospital, his neurologic evaluation, as far as damage to the brain was concerned, was of primary importance. The patients that could be rehabilitated for military duty and those that demonstrated neurologic defects that incapacitated them for duty could be decided on. The treatment that was necessary for all patients included the control of residual or persistent infection, the rehabilitation and conditioning of the paralyzed and aphasic patients, control of convulsive seizures, removal of intracerebral foreign bodies and the repair of defects of skull and scalp. Everything was done to guarantee that the soldier was returned to the Armed Forces or to civilian life in the best possible physical and mental condition and that he received maximal hospital benefits.

Some of the returning soldiers who had compound fractures of the skull required no actual neurosurgical treatment in this country, as the necessary surgical treatment had been completed overseas. Improvement of the incomplete motor paralysis was invariably proportional to the excellent early débridement of the craniocerebral injury and the intensive rehabilitation measures instituted in the centers overseas. The hemiplegic patients who were received at Lawson General Hospital often were greatly helped by the application of an ordinary footdrop brace of the type used in cases of paralysis of the peroneal nerve or sciatic nerve, since the use of the brace improved the mobility and inhibited the spastic extension of the ankle. Physical therapy and occupational therapy were considered of extreme value in the rehabilitation program. Of the seventy-two patients selected, eleven required no further surgical treatment at this hospital.

The craniocerebral injuries requiring surgical procedures at Lawson General Hospital could be divided readily into several large groups: those requiring removal of retained fragments of bone or foreign bodies, those requiring repair of defects of the skull, those with persistent infection

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of scalp, skull, brain or meninges, and a combination of any of the foregoing three groups.

Nine patients of the seventy-two selected arrived with persistent infection of the scalp, skull, brain or meninges. Three of these patients had a definite cerebral abscess. Retained intracerebral fragments of bone were found to be the source of trouble in most of the cases of persistent, purulent drainage. It was clearly demonstrated to us that with the use of chemotherapy the drainage ceased as long as penicillin or sulfa derivatives were being employed but infection always recurred when administration of the drugs was discontinued. Infection was controlled only by surgical excision of the infected sequestra. When the infection was inhibited by chemotherapy, removal of fragments of bone at the time of cranioplasty rarely caused any serious complications. Our experience has been that it is well to saturate the patient with penicillin before the intracerebral fragments of bone are removed, even if as much as six months has elapsed since his injury. In one case, in which the patient had been injured six and a half months prior to admission, hemolytic streptococcal meningitis quickly developed and positive cultures were obtained from the fragment of bone when it was removed. This patient responded well to administration of penicillin and sulfadiazine and made an uneventful recovery. Fibrin foam saturated in thrombin and penicillin was of value in maintaining concentrated bacteriostatic and hemostatic agents in a localized area. Frank cerebral abscesses were invariably drained surgically and this treatment was supplemented by the parenteral and local use of penicillin. Once the sequestra had been removed or the abscess drained, the clinical signs of infection disappeared. A tantalum plate could be used to cover the large defect in the skull within six weeks to two months from the time of cessation of drainage, in the majority of cases, provided prophylactic chemotherapy was employed prior to, and for several days after, the operation.

The policy of the Neurosurgical Section at Lawson General Hospital has been to remove intracerebral fragments of bone because of their known tendency to prolong purulent infection or to serve as a possible nidus for cerebral abscess and also because they increase formation of cerebral scars and the number of convulsive seizures. In eighteen cases of the seventy-two removal of intracerebral fragments of bone was deemed advisable. Metallic foreign bodies were removed at the time of excision of depressed fragments of bone only if they were readily accessible. Rarely did we feel that it was necessary to operate specifically for metallic fragments as normal brain tissue is often unecessarily damaged by such a procedure.

The plastic repair of a large defect of the skull by means of a tantalum plate was recommended to sixty of the seventy-two patients who had compound, comminuted, depressed fractures of the skull. The actual psychologic benefit from closure of a defect of the skull was a noticeable factor and it was of interest to note that the patients who had the most damage to the brain and the greatest physical disability were often the most insistent on having a tantalum cranioplasty. Our experience indicates that the post-traumatic symptoms of postural headache and dizziness are greatly improved by closure of a defect of the skull. The protection of the brain from trauma and the restoration of the normal cosmetic appearance of the skull are obviously important reasons for closing the defects.

Unfortunately the underlying damage to the brain is not affected by repair of the skull. The electro-encephalographic data noted on the entire group indicate that abnormal brain waves are the rule rather than the exception. However, a surprisingly small group of the patients had a recorded incident of a convulsive seizure or an observed attack. Only fifteen patients of the seventy-two were known to have had a convulsion but from the electro-encephalographic data perhaps 35 to 40 per cent may have convulsions at some future time. All patients who had abnormal brain waves were maintained on anticonvulsive drugs. The incidence of neurologic defects was high. In 41 per cent of the cases there was some form of aphasia, hemiplegia, hemianopsia, spastic paraplegia or sensory disturbance at the time of final disposition.

The data compiled from seventy-two consecutive cases, observed at Lawson General Hospital, of compound, comminuted fractures of the skull resulting from injuries sustained in actual combat perhaps represent a fair estimate of what has been noted elsewhere. By combining Campbell's figures for the combat area with our figures for an Army general hospital in the zone of in-

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VERTIGO IN HYPOTHYROIDISM

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VERTIGO has been aptly defined as "a consciousness of disordered orientation of the body in space." Objects may appear to be moving or the individual may feel that he himself is moving. It is a very common symptom and because of its relation to pathology in the labyrinth of the ear or to extra-ocular muscle imbalance, patients eventually consult or are referred to the opthalmologist or otologist in search of the etiology.

Vertigo has been classified by Brain[2] into seven types, determined by the neurological level at which the causative lesion occurs. These are: (1) psycogenic; (2) cortical; (3) ocular; (4) cerebellar; (5) brain stem; (6) vestibular nerve; (7) aural. Aural or labyrinthine vertigo resulting from some disturbance in the inner ear is by far the most common of these. The commonly mentioned causes for aural vertigo are: (1) infection, resulting in purulent or serious labyrinthitis; (2) drugs—notably alcohol and quinine; (3) middle ear disease; (4) bacterial toxins; (5) allergy; (6) thrombosis or hemorrhage into the labyrinth; (7) high blood pressure; (8) labyrinthine dropsy or "hydrops of the labyrinth," now thought to be the status in advanced Ménière's disease; (9) functional.

Little difficulty is encountered in differentiating aural vertigo from any of the others, except possibly in the early stages of eighth nerve tumor. Here deafness is more profound and permanent and other nerves, notably the 6th and 7th, are liable to be involved. It has been much more difficult to determine with certainty the etiologic factor in a given case of aural vertigo. Infectious labyrinthitis is a fulminating, destructive disease usually causing complete deafness and ending in meningitis. Vertigo from drugs and bacterial toxins is transient and relieved with elimination of the foci of infection or cessation of the drugs. Elimination of infection, granulations and cholesteatoma in middle ear disease should relieve vertigo from this cause. Vertigo due to allergy is rare. The author has seen a case in a young woman who had repeated attacks of vertigo, nausea and vomiting apparently brought on by ingestion of eggs. After exhaustive search for other causes this case was classified as allergic labyrinthitis. The patient remained free from attacks as long as eggs were eliminated from her diet. Thrombosis or hemorrhage into the labyrinth is probably rare and may be confused with Ménière's disease. The vertigo is of longer duration and hearing loss is permanent. Some writers have mistakenly assumed Ménière's syndrome to be due to hemorrhage because Ménière did describe a case of labyrinthine hemorrhage. The mechanism by which vertigo can be induced by high blood pressure is not clear. It apparently does occur in some cases when no other cause can be found.

Ménière's disease is now considered to be a clinical entity, in which recurring attacks of vertigo are the outstanding characteristic but which also develop deafness and tinnitus and, in severe attacks, nausea and vomiting and which shows at autopsy (in all of approximately a dozen cases so studied) extensive dilatation of the endolymphatic spaces, in particular the choclear duct, the saccule and the utricle. It is generally agreed that the condition is non-inflammatory but there is no general agreement on the etiology. Nelson[14] found that there is water retention in Ménière's disease. Hallpike and Cairns[9] first studied the pathology of the internal ear in Ménière's disease. The outstanding feature in their two cases was gross dilatation of the endolymphatic system.

The group designated here as "functional vertigo" will include all those other cases which show no middle ear or intracranial pathology, but who are subject to periodic attacks of vertigo, at times with nausea and a sensation of fullness or a drumming in the ears but who only occasionally show any appreciable deafness. Next to vertigo these people complain of an almost constant fatigue. They get up tired in the morning and with great effort start the day's work. They are capable of doing as much or more physical or mental work than the average individual, but they have to drive themselves to it.

The majority of these patients have low blood pressure. They probably have more than the average amount of gastro-intestinal disturbances.

Read before the Minnesota Academy of Ophthalmology and Otolaryngology (Saint Paul, Minnesota, December 14, 1945).

In many cases, headache is an outstanding symptom. Many show some vasomotor instability. The most characteristic finding in individuals with this syndrome is a low basal metabolic rate. It is not however, as low as that found in myxedema. Occasionally these patients, particularly those in their teens, show a slight tendency to put on weight but the majority tend more to be underweight. Thick, dry skin, dry hair, mental sluggishness, all characteristic of myxedema, are conspicuous by their absence. There is no increased skin pigmentation nor evidence of tuberculosis to suggest Addison's disease.

Vertigo complained of by these patients has all the characteristics of a true vertigo and not merely a "lightheadedness" or syncope. As patients generally describe the sensation of objects, such as pictures on the wall, rotating back and forth it is evident that the attacks are often accompanied with nystagmus. Many state that, if standing, they are compelled to sit or lie down or grasp some object to keep from falling. The first attacks are often alarming. The attacks usually last a few minutes but have continued and kept some patients prostrate for several hours. One woman stated that she was unable to open her eyes for as long as twelve hours. Attacks tend to recur on movement of the head for varying periods of time. They occur at irregular intervals and several patients had frequently recurring attacks for several weeks at a time. A goodly number have had attacks at night and others on getting out of bed in the morning. A typical case is that of a forty-two year-old policeman, a robust individual weighing around 180 pounds, all muscle, of ruddy complexion and the picture of perfect health. He awakened one night violently dizzy and felt as though he were falling out of bed—the room seemed to be turning over and over and he was nauseated. The attack passed off in a matter of minutes but he was a little unsteady for several hours. In the course of the next few days he had several attacks. Thinking that his trouble was due to his eyes he consulted the writer. The ears and eyes showed no abnormality. The only abnormal finding was a metabolic rate of minus 36. He admitted feeling tired a great deal of the time. He was given desiccated thyroid gland which he has since taken daily. He has had no more attacks of vertigo over a period of a year and a half and his fatigue has been relieved.

A total of thirty patients, who were referred by other physicians or who came because of vertigo have been collected. Twenty-two of these were seen within the last two years. They range in age from fourteen to seventy-three. The majority are between thirty and fifty. There are twenty females and ten males. Vertigo was constant in all, fatigue in all but one. Ten complained of headaches, usually in the morning. In most the fatigue was also most marked in the early morning. A few had mild tinnitus. One, a thirty-four-year-old woman who gave a history of marked fatigue and recurring attacks of vertigo, often with nausea and tinnitus over a period of fourteen years, showed a hearing loss of 68 decibles in one ear and 15 decibles in the other ear. Her family physician, who saw her in one attack noted nystagmus. This patient could qualify, by all the known standards, as a case of Ménière's disease. Many complained of vague eye discomforts and fatigue on reading. One had bilateral keratoconus. One had an old retinal scar of long standing in one eye. The majority of the others had low grade refractive errors with normal corrected vision. No cases were included who showed middle ear disease, or even a perforated ear drum. Two patients gave a history of mild epileptic attacks. One of these was moderately obese but mentally alert and active. One was seen during a normal pregnancy. On the whole they were otherwise a very healthy group. In this group there were teachers, students and professional people. Their mental ability is probably above the average.

On examination, the majority had blood pressures ranging from 110 down to 90 systolic. Two had mild hypertension and several were seen with pressures normal for their ages. Many exhibited some vasomotor irritability such as cold, perspiring hands and feet, hot flashes and easy flushing. Basal metabolic rates ranged from minus 7 to minus 40 and averaged minus 18. Blood cholesterol, said to be uniformly elevated in hypothyroidism, was not determined in these patients.

A number of other patients were seen during this study with the characteristic symptoms of vertigo and easy fatigueability in whom the basal metabolic rate was reported from minus two to minus five or six. For various reasons the test was not repeated and these patients were excluded from the series. The limit on the basal metabolic

TABLE I

	SEX	AGE	SYMPTOMS	B.M.R.	B.P.	COMPLICATIONS	TREATMENT	RESULTS
M.E.N.	M	46	Dizzy attacks, eyes tire, fatigue.	—21	104/70	0	X	Relieved
E.S.L.	F	34	Dizziness (nocturnal) 14 years; nausea; nystagmus; fatigue.	—19		Deafness 69 dec. Lt. Deafness 15 dec. Rt.	X	Relieved
R.W.R.	M	31	Dizziness; morning fatigue; eyes tire.	—20	98/60	Formerly gastric ulcer (X-ray negative).	X	No report
E.B.	F	43	Dizziness; fatigue; nausea; eyes tire.	—11	108/60	Epileptic convulsion twice a year.	X	Relieved
T.W.	M	73	Dizzy attacks.	—19	102/ to 136/	0	X	Relieved
J.L.A.	M	47	Dizziness; morning fatigue.	—28	138/80 to 190/	Deafness 13 dec. Rt. 6 dec. Lt.	X	Relieved
M.E.O.	F	42	Dizziness (fell once).	—23	"Low"	Incipient cataract.	X	Relieved
T.A.	F	41	Dizziness; eyes tire; morning fatigue.	—9	110/70	0	X	Excellent, complete relief.
H.R.	F	56	Dizziness; (nocturnal); morning fatigue. Neuralgia; "unconscious" spells.	—16	140/88	0—histamine did not relieve.	X	Relieved, stopped treatment.
E.D.	F	31	Vertigo; headaches; fatigue (nocturnal)	—12		0	X	Relieved
N.L.	F	32	Dizzy attacks (nocturnal) "all her life."	—40	90/	0	X	Relieved
I.V.	F	14	Dizzy attacks (nocturnal), headaches.	—19	130/	0	X	Relieved
F.H.	F	47	Dizziness; fatigue.	—14	130/		X	Only one or two attacks since treatment began.
D.M.	M	44	Dizzy (nocturnal); fatigue.	—36	118/70	0	X	Relieved
W.R.	F	23	Dizziness; "ears blocked" one month.	—11	100/ to 135/	Normal pregnancy.	X	Relieved
E.P.	F	34	Dizziness; headaches; blurred vision; nervous.	—20		0	X	Relieved
P.A.	M	26	Headaches; fatigue.	—14	130/	0	X	Relieved
F.R.	F	51	Violent dizziness; frequent morning headaches.	—20	142/86	0	X	Relieved
C.W.P.	F		Dizzy attacks.	—11		0	X	Relieved
C.S.	F	17	Dizzy; fatigue.	—17	118/	0	None	
I.G.W.	F	40	Dizzy attacks (nocturnal); nausea; headache.	—14	105/68	Keratoconus. Old polio.	None	
R.A.C.	M	31	Headache; dizzy attacks.	—7	108/60	0	None	
J.M.	F	57	Dizzy; "eyes don't focus."	—12	103/65	0	X	Relieved; "made a new woman of me."
W.E.	F	32	Fatigue; dizziness; headaches.	—29	120/80	Epilepsy since 14; moderate obesity.	X	Relieved of vertigo. Feels much better.
W.McG.	F	26	Fatigue; frontal headaches; constant dizziness.	—22	130/80	0	X	Relieved
M.S.	M	55	Violently dizzy (nocturnal).	—77	110/	0	X	No more attacks of vertigo. Feels fine.
W.J.	M	18	Very dizzy; removed from game two times.	—10		0	X	Relieved
L.S.	M	45	Dizziness; morning fatigue; eyes tire.	—7	146/80	0	None	
M.S.A.	F	47	Dizziness (nocturnal); fatigue; headache.	—25	130/	0	X	Relieved. No vertigo.

rate was arbitrarily set at minus seven. It is expected that there will be criticism for setting the limit so close to normal, as the statement is frequently made that a basal metabolic rate of less than plus or minus 10 or 15 is meaningless and of no value. This assertion cannot be supported. While it is true that anxiety, lack of rest, iodine, food and many other factors may have the effect of giving an erroneously high basal metabolic rate reading, none of these factors, in fact nothing except certain endocrine disturbances, drugs and debilitating diseases, is liable to give an erroneously low reading. The readings are generally inclined to indicate a higher rate of metabolism than would be found if stimulating factors could be completely excluded. Warfield[18] points out this fact and stresses the point that a lowered rate, with symptoms, should be seriously considered. Two patients in this series who gave basal metabolic rates of only minus seven had severe attacks of vertigo with nystagmus. One was a city bus driver who, on one occasion, was compelled to stop his bus until he recovered his equilibrium. The other, a professional man, was awakened at night with violent vertigo and nystagmus and was unable to move, even to turn his head, without precipitating further attacks. He was at home alone and became alarmed, fearing he was having a "stroke." He admitted almost constant fatigue at the beginning of the day. His symptoms were completely relieved by thyroid therapy. He has had no more attacks of vertigo. His fatigue is prevented with two to three grains of thyroid extract daily.

These cases are not classified as Ménière's disease, though there seems to be no clear-cut line of distinction between cases such as these and those with the classical clinical picture of vertigo, tinnitus, deafness and nausea, generally said to constitute Ménière's syndrome. There is lack of agreement, even among those who insist on a strict adherence to Ménière's original description of the symptom complex, as to just what is necessary for a diagnosis. While some authors insist on a complete picture, others classify cases with vertigo alone in individuals with no demonstrable clinical pathology in the ears, as Ménière's disease. Horton[11] does not believe that hearing loss is necessary to make a diagnosis of Ménière's disease. Lindsay[12] states that it is sometimes possible to distinguish three stages of Ménière's disease. In the first stage, according to Lindsay, vertigo alone exists and may appear several weeks or months before tinnitus and deafness appear. The second stage is characterized by vertigo and fluctuating auditory symptoms. In the third stage vertigo may be absent or seldom present, deafness is marked, tinnitus fluctuates and the caloric response, which is normal in the first and second stage, is now diminished.

Two cases in the writer's series had definite hearing loss and several had mild tinnitus and nausea. The vertigo is certainly no different and no less severe than that described in many cases reported as Ménière's disease. Are these, then, cases of early Ménière's disease and will they progress to advanced stages of deafness with dilated endolymphatic spaces? Or does Ménière's disease so commonly exist in mild form? Except for the single symptom of vertigo the identical clinical picture found in these cases has been reported in a number of papers on hypothyroidism by Seward[16], Higgins[10], Warfield[18] and others. These reports were made by internists and this may account for the fact that vertigo was not mentioned. Patients with vertigo quite naturally relate this symptom to some disturbance of their eyes and ears and seek relief from the opthalmologist or otologist. Several clinicians with whom the writer consults are now increasingly finding low basal metabolic rates in patients with vertigo as an outstanding symptom. All the above-mentioned authors lay great emphasis on the fatigue which is a constant finding in their cases.

It seems rather strange that only twice in the literature was mention of low metabolism found in connection with vertigo. Lindsay[12] briefly mentions "recurring attacks of vertigo without auditory symptoms in individuals with low blood pressure and low basal metabolic rate." He states that in some of these cases it is possible to locate the lesion in the central nervous system. He further states that in some such cases hearing loss occurs and it is then possible to diagnose them as Ménière's disease. Lindsay also mentions fatigue, depression and vaso-motor instability as common symptoms occuring in Ménière's disease. Weiss[19], writing on the subject of vertigo, states "These persons may have a low basal metabolic rate without myxedema." He, however, does not suggest thyroid therapy and further states that "an effective schematic treatment for vertigo cannot be expected."

It would seem then, from the symptoms and the clinical findings that hypothyroidism and the symptom complex described as Ménière's disease are very close together and may be related. Some well-known facts about thyroid deficiency would tend to further emphasize this possible relationship. Hydrops of the labyrinth is now accepted as the characteristic pathological finding in Ménière's disease. This indicates a disturbance in the water balance in the body resulting in water retention in the endolymphatic spaces. No one has thus far offered a satisfactory explanation of this pathological finding. Grollman[8] states that the water balance of the body is markedly affected by the state of thyroid activity. In thyroid deficiency there is an accumulation of water in the tissues—thought to be in the intracellular spaces. The administration of thyroid causes the tissue to lose water and produces diuresis in the hypothyroid individual. Furthermore, the administration of thyroid or thyroxine causes an increase in cardiac output with generalized increase in blood flow through the capillaries. Conversely, decrease in thyroid activity produces a decrease in blood output by the heart. In prolonged hypothyroidism there may be permanent impairment of the heart action due to damage to the heart muscle.

Mygind and Dederding[13] in a paper entitled "Studies on Some Cutaneous and Subcutaneous Phenomena and their Relation to the Labyrinthine Alterations in Mb. Mènièri" in 1929 called attention to the frequent occurrence of subcutaneous fatty deposits in this disease. This corresponds to the isolated fat deposits characteristic of myxedema. These investigators stated their belief that the ear phenomena in Ménière's disease depends upon an abnormal deposition of water in the internal ear due to deficiency in capillary function.

Horton[11] considers the most likely etiological factor in Ménière's disease to be "Local alteration in capillary permeability resulting in local edema." Horton has obtained immediate relief in cases suffering with severe vertigo with the intravenous administration of histamine and his patients are apparently kept free of attacks by small maintenance doses.

Atkinson[1] makes use of histamine in a different manner. He believes that the etiology of Ménière's disease is a vasomotor disturbance: in some patients due to vasodilatation and in others due to vasoconstriction. Those in the former group, he believes are allergic to histamine. They are determined by positive skin reactions to histamine and are treated by desensitizing the patients to histamine. The majority of his patients are relieved. The vasoconstrictor group he treats with nicotinic acid. Campbell[4] claimed good results in nine of eleven patients treated according to Atkinson. Cawthorne and Hallpike[5] and Rainey[15] have obtained good results with histamine, intravenously. It is not known how the injection of histamine intravenously acts to control vertigo. The action of histamine on the capillaries is to dilate and increase permeability and thus contribute to water retention. Schick[17] claimed relief in a small series of cases with intravenous injection of magnesium sulfate. This was used because of its diuretic effect and also as a depressant to the central nervous system. Brunner[3] recommended the use of iodine and calcium but offered no rationale for this form of treatment. If hypothyroidism is the basis for the vertigo, iodine is, of course, logical therapy.

Probably the treatment most widely accepted in Ménière's disease is that directed toward restoring the body water balance to normal. In 1934, Furstenberg, Lashmet and Lathrop[7] showed, in a carefully controlled experiment, that general body water retention alone does not induce an attack of vertigo in a patient with Ménière's disease. Attacks could, however, be produced at will by administering sodium salts, even in a state of dehydration. Ammonium chloride was found to effect the loss of stored water but failed to produce attacks of vertigo while supplying the chloride needs of the body. These authors, therefore, theorized that the relief of the symptoms in Ménière's disease is due more to the loss of sodium salts than to water alone. The Furstenberg replacement treatment is based on this work. Salt is excluded from the diet and ammonium chloride administered by mouth.

Vertigo can be relieved by several surgical procedures. Years ago in England, Woodman[20] is said to have obtained relief in a number of cases by stripping up the dura and rupturing the ductus endolymphaticus. Dandy[6] advocates section of the vestibular nerve in severe cases. This operation undoubtedly cures aural vertigo but the tinnitus remains. Wright[21] advocated alcohol injections through the oval window to cure aural vertigo. He claimed to have satisfactorily treated fifteen cases by this method. Cawthorne, Good-year, and Day have successfully treated vertigo by uncovering the semicircular canals.

In the series of thirty cases here presented, twenty-five received thyroid therapy. All these were relieved of their vertigo and most other symptoms on adequate dosage to bring the metabolic rate up to near normal and hold it there. These patients experience such a feeling of well being in addition to relief from the attacks of vertigo that most have co-operated well in the treatment.

Because thyroid hormone is cumulative in the body, only a small daily dose is required. This will, however, vary with the individual and the metabolic rate. According to Grollman, a single dose reaches its maximum effect on about the seventh to tenth day. Assuming this to be the tenth day, it has been calculated that a daily dose of one grain of desiccated thyroid reaches its maximum effect on the nineteenth day when it would be equivalent to 5.5 grains. Grollman further states that 1 mgm. of thyroxine intravenously (equivalent to 1 gm. of desiccated thyroid) increases the basal metabolic rate of normal individuals about 2.8 per cent. But hypothyroid individuals are more sensitive to thyroid than are the normal and respond to smaller amounts of the hormone.

The precipitating cause of an attack of vertigo is thought, by some of those who hold to the vasospastic theory, to be due to sudden vascular dilatation, with an inrush of blood, following a spasm of the labryinthine vessels. Hallpike has suggested that, with the endolymphatic spaces dilated practically to the limit of their bony shell, any slight further increase in the fluid content would set up an irritation resulting in vertigo. This theory presupposes an advanced pathological condition in the labyrinth while vertigo is, in fact, one of the earliest symptoms in Mèniére's syndrome. Lack of evidence of auditory damage in the early stages does not support the assumption that such extreme dilatation exists from the beginning.

With decreased output of blood by the heart and sluggish flow from low blood pressure and low metabolism in hypothyroid states, there is decreased oxygen supply to the tissues. It has also been shown that after removal of the thyroid gland, other body organs show a decrease in oxygen consumption. There is an accumulation of lactic acid in the blood. A state of anoxia exists in the tissues. These facts suggest the possibility of attacks of vertigo being precipitated by the accumulation of waste metabolic products in the endolymph. A surprising number of patients experience their vertigo at night, or on arising in the morning when the blood pressure and doubtless the metabolism are at low ebb.

Summary

Thirty patients, characterized by recurring attacks of vertigo, fatigue, low basal metabolism and low blood pressure are presented. Desiccated thyroid gland generally gave relief from symptoms in twenty-five patients who were treated. Some points of similarity between this symptom complex and Ménière's syndrome are noted. The possibility of attacks of vertigo being precipitated by the accumulation of waste metabolic products in the endolymph is suggested. Routine basal metabolic studies and blood cholesterol determinations should be made in patients with Ménière's symptom complex.

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THE EVALUATION AND MANAGEMENT OF RECURRENT HEADACHES

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It is not within the scope of this paper to parade each type of headache and discuss it diagnostically and therapeutically. Certain few headaches, such as classical migraine and histaminic cephalalgia are distinctive. A great number of headaches, however, do not show such repetitious, clear-cut pathognomonic features. These require a broader approach and more thorough investigation. It is with the approach to the problem of non-classical, non-distinctive, recurrent headaches that we wish to concern ourselves.

The complaint of headache is one of the commonest in the practice of medicine. In the neurologist's office, it is a daily problem. Seeing these patients day after day, we have developed certain lines of attack and concepts concerning the questions:

1. Why does he have this pain?
2. What can be done about it?

Physiology

The fundamentals and physiology of pains in and around the head are of interest. Recent work[18] indicates the following significant physiology.

It has been demonstrated that the cranial and intracranial arteries, the great venous sinuses and their tributaries from the surface of the brain are sensitive to pain.

Likewise, other structures supplied by the fifth, ninth, and tenth cranial nerves and the first three cervical nerves are sensitive to pain. Most of everything else intracranially, including the brain itself, the dura, the arachnoid membrane, and even the choroid plexus are not sensitive to pain.

Certain basic mechanisms of headache production from intracranial sources have been demonstrated: (1) traction on the veins or arteries mentioned; (2) distention or dilatation of these vessels; (3) irritation or inflammation in any of the other structures supplied by the cranial and cervical nerves mentioned; (4) direct pressure by space-occupying lesions on these nerves.

Pathways for pain for structures above the tentorium, are contained in the fifth cranial nerve. Pathways for pain concerned with structures in the posterior fossa are concerned with the ninth and tenth cranial nerves and the upper three cervical nerves.

Stimulation around the circle of Willis or the large cerebral arteries near it causes pain in, over, and behind the eye on that side. Stimulation of the vertebral or basilar artery, or their nearby branches, causes pain in the occipital or nuchal area.

The above mechanisms are only integrated parts of a complex nervous physiology in the head and neck which involves smooth and striated muscles, vascular tone, secretory activity and uncharted pathways for pain.

The Patient's Story: History Taking

The patient with headaches usually has a wealth of diagnostic information to give, if his physician has the time and patience to obtain it. No headache is ever covered in three or four sentences. It invariably boils down that certain fundamental information is desirable before the "history" is complete. Whenever possible, the patient is permitted to do the talking. From time to time, questions may be supplied. How the patient tells his story and how well he has observed his complaint are important to note. Rather than an immediate plunge into "Tell me about your headache," it is best to assume a more general approach. The following questions are not leading and should open the history taking:

1. How long has it been since you have been in 100 per cent good health?
2. You were going along, feeling fine, then what was the *first* thing that happened?
3. What are the *main things* bothering you *now?* (What symptoms, weakness, hurting or things not working right?)

To ensure complete coverage, a record sheet may be valuable (Fig. 1). It may serve as a permanent record or to assist in dictating a more formal note. As mentioned, there are a number of things to learn about a headache. A great many facets characterize headaches and bear careful inquiry:

1. Has he ever had previous bouts of headaches seemingly unrelated to present complaint?
2. Possible etiological factors. Where was he and what had he been doing when they were first noted? What does patient blame onset on? What preceded it or ushered it in? Did it follow pneumonia, flu, a head injury (even minor), heavy lifting, earache, an emotional upset?
3. Exact location of present complaint. Radiation?
4. Any *other* type of head pain or ache? Don't overlook fact that patient may have *more* than one kind of headache.
5. Quality of distress: dull, ache, throb, sharp, jab, bruised feeling, cramp, electric shock, tightness, pulling, viselike, sore scalp, hang-over feeling, tired feeling, et cetera.
6. Severity: A headache may be considered just annoying, actually bothersome, debilitating or excruciating. How much does it distract or disable? How much effort required to continue with it? How much time is lost from work, pleasures? How much does it impair efficiency, sleep or emotional state? Have desirable plans or modes of living had to be changed? How much doctoring and sick call? How often are remedies necessary? Do they help? Are codeine or heavy sedation ever necessary?
7. Course to date: Was onset gradual and insidious or sudden and somewhat dramatic? What changes have taken place as time goes on? Have intensity, frequency, duration, location or type of pain changed?
8. Frequency and duration of attacks *now.*
9. Pattern of a typical attack: aura, onset, build-up, peak, plateau, attenuation, hangover.
10. Diurnal pattern: Characteristic time of onset? When is usually best or worst time of the twenty-four hours?
11. Associated symptoms: (are these quite distressing in themselves?) nausea, anorexia, urinary frequency, sweating, red eyes, syncope, dizziness, photophobia, visual changes, tears, nose run, tinnitus, paresthesias, nervousness, depression, ataxia, flushing, neck rigidity.
12. What conditions precipitate or aggravate a headache? Are they stressed as important factors in frequency, severity or duration of attacks? Sudden increase of intracranial pressure (coughing, sneezing), certain types of activity, motions of cervical spine, vestibular stimulation, sudden change of position, nervousness, emotional states, alcohol, food sensitivity, missing a meal, heat, eyestrain, dust, damp weather, et cetera.
13. Relief: medication, tilt head a certain way, spinal tap, alcohol, local pressure, position of comfort, coca cola, coffee, hot or cold shower, sleep, emesis, local applications, laxatives, nose drops, bed-rest.

Leading or suggestive questions to patients must be avoided. We may practically "give it away" to a patient that certain characteristics are necessary if this is going to be a good story. I am sure that some "good" migraine histories are inadverently "made" by leading and innocently repetitious questions.

Headache Sheet

1. Previous headaches
2. Possible etiological factors
3. Exact location
4. Other types
5. Quality

6. Severity
7. Course, changes
8. Frequency and duration attacks **now**
9. Pattern of each attack
10. Diurnal pattern
11. Associated symptoms
12. Precipitated or aggravated by

13. Relief

Fig. 1. Type of record sheet used in history taking.

A detailed account of the headaches is valuable for three reasons:

1. It provides a valuable number of clues which narrow the diagnostic possibilities down to a few or several.
2. For future comparison, it gives an accurate means of checking the consistency of the patient's story. This may be a valuable point in diagnosis.
3. With passage of time it permits an objective evaluation of progression or attenuation.

Who Is the Patient?

As history taking proceeds, it is often valuable to inquire: Who is the person who has these headaches? Does his own vegetative nervous system or personality contribute in any way to these headaches? How does he take them?

Disability Rating

It is usually necessary to evaluate how disabled the patient actually *is* and how disabled he *says* he is. How much is he actually disabled from the standpoint of: (1) actual severity of the attack; (2) duration of the attack; (3) frequency of the attacks.

Precipitating and Aggravating Factors

It is important to pay careful attention to conditions which tend to: (1) precipitate a headache; (2) aggravate a headache once it is present.

These conditions often give diagnostic clues.

They may bring out conditions for the patient to avoid in the interest of less difficulty.

Precipitating and aggravating factors are of two types, readily understandable and not readily understandable, physiologically. The supposedly understandable ones are like coughing with brain tumor headaches, a stopped up nose with sinus headaches, reading small print with ocular headaches. The more empiric conditions concern posture, time of the day, alcohol intake and so on. For instance, it is not readily explainable why the hypertensive cannot stand a warm room or the concussion case cannot stand train rides.

We have endeavored to carefully explore precipitating and aggravating factors among headache types frequently found among soldiers at this hospital. The usual history taking, question and answer method proves tedious when one tries to cover all conditions related to exercise, varying intracranial pressure, jarring, cervical spine, emotions, position, sudden motion or change of position, alcohol, photophobia, eyes, hypoglycemia, foods, fever, extreme temperature, nose and sinuses, vestibular stimuli and certain other conditions patients often mention (such as constipation or odors). We have found it expedient to cover all of these questions by placing them as simple statements of conditions on about 100 cards (e.g., "A truck ride over rough roads," "Cold weather," "Bending forward exercises," "If I suddenly go flop on the bed"). The patient then picks out the most important precipitating and aggravating conditions.

Etiology

The ideal hoped for is to find exactly what is causing a given complaint. The problem of headache, perhaps more than any other local pain problem, leaves the physician disappointed who frequently expects to find some simple, extricable or counteractable explanation.

Knowing the diagnostic possibilities, clues are found in the careful history, examinations, laboratory aids and some knowledge of the individual physiology at hand. We have found the following etiological considerations practical as diagnostic work-up proceeds with recurrent headaches:

1. Intracranial pathology
   - (a) Inflammatory (includes syphilis): abscess, diffuse encephalitis, granuloma, meningitis.
   - (b) Neoplastic (primary, metastatic).
   - (c) Traumatic or physical agents, "concussion," subdural hematoma, "sunstroke," subdural hydroma, meningeal scars.
   - (d) Vascular (including extracranial vessels) aneurism, arteritis, phlebitis, thrombosis, hemorrhage.
   - (e) Those associated with (usually following) convulsive disorders.

2. Neuralgia and neuritis (V, IX, X cranial, cervical II, III)

   Occipital nerve neuralgia.
   Supraorbital neuralgia (also tic doloreaux),
   Sluder's neuralgia.

3. Muscles of scalp and neck

   Emotional tension ("muscle hypertension"), spasm secondary to pain elsewhere, Myositis, Fibrositis.

4. Disease of skull (cranial bones)

   Osteomyelitis, blood dyscrasia (marrow)

5. Ear, nose, throat (includes sinuses, petrositis, et cetera).

6. Dental and temporomandibular joint.

7. Ocular

   Hyperopia, Astigmatism, Anomalies of accommodation, Glaucoma, Muscle imbalance, Iritis.

8. Cervical spine and intraspinal canal (above C4)

   Arthritis, Primary bone disease, Anomalies, Chronic inflammatory, Neoplasm, Fracture, Dislocation.

9. Exogenous toxins (metals, gases, sprays, fumes, dusts, liquids, medications).

10. General systemic disease.

    Hypertension, Polycythemia, Chronic Febrile, Infectious States, Allergy (including histamine sensitivity), Endocrine Imbalance.

11. Psychosomatic. An important link in the causation and progression of many headaches lies in the emotional-vegatative physiology of the individual. This is true in other diseases, such as duodenal ulcer and hypertension. This group of patients is not necessarily neurotic in the common use of the term. Many "migraines" belong here.

12. Psychoneurotic. Neurotic and immature personality features, hampering conflicts and maladjustment are readily noted in this group. These characteristics assist in the vicious cycle to cause more tension and discomfort. Examples of headache patients often found include:

    Those with dramatic, embellished, hard-to-believe types of headaches.
    The chronic invalid: "never strong."
    The hypochrondriacal: introspective, harping, overevaluates minor distress.
    The inadequate (headache proves a valuable excuse for poor school, occupation or Army record).
    The chronically anxious, worrisome, apprehensive.

13. Attitudinal: Administrative problems, seen particularly in prison or military service, compensation and litigation cases.

    Malingering (psychopath)
    Quick excuse (benign, spur of moment)
    Fairly conscious exaggeration of mild symptoms ("Riding it," "bucking.")

Most Severe Headaches

The most severe, excruciating types of headaches are due to: (1) migraine; (2) rupture of intracranial aneurism; (3) acute, severe meningitis; (4) major, acute infectious disease (typhoid, dengue, et cetera); (5) psychoneurosis.

How Much Fuctional and How Much Organic?

Again, etiological implications are important and complex. Perhaps even more than in abdominal distress, the individual with headaches is interposed in the reflex arc giving rise to distress. The diagnosis is often more understandable if "functional versus organic" delineations are dropped. Instead, we strive to evaluate how much of the origin of this headache lies in the personality or emotional physiology of this individual and how much lies in some less reversible cytoplasmic changes. History and findings plus some knowledge of the individual involved will throw the balance one way or another. We have found the following diagnostic clues helpful:

Organic

Onset preceded or ushered in by conditions with etiological implications, such as otitis media, pulmonary infection, head trauma, et cetera.
Good health to a certain, reasonably recent time.
Headaches are of relatively recent origin (even up to a few years). May be insidious in appearance.
If he had headaches many years, there was a recent *change* in location or character of distress. Increase in intensity, frequency or duration may be significant if definite.
Progression or at least a note of it over a period of time (even if remissions occur).
A reasonably good observer and informant.
Minimal exaggeration.
Admits good days, relief.
Debility resulting from distress is understandable.
Tolerates discomforts like an adult.
Does not overevaluate health.
Has some perseverance, responsibility, goals.
No complicating attitudes.
Does not abuse alcohol.
Minimal use of emergency analgesics, barbiturates, bromides.
Minimal indications of chronic state of emotion.
Story is reasonably consistent when checked again at various times.
Other signs or symptoms of organic nature present: namely, visual loss, skull films, sinusitis, et cetera.
Conditions which precipitate and aggravate headaches are chiefly those related to organic pathology.
Character of distress. Ache, pain, hurting. No great amount of descriptive gymnastics necessary.
Methods by which relief is obtained. Following spinal puncture; sudden changes of position; tilting head; dehydration (by purging or emesis).
Absence of or minimal litigation and compensation problems.

Functional

Onset preceded or ushered in by emotional situations or is vague.
Recurrent or chronic poor health for many years. Recurrent ill-defined ailments. Vague story about health.
Headaches are long-standing (especially if more than five years).
No change. "Spittin' image" of headache he has had many years. Changes in intensity, et cetera, not convincing or are related to situational stress.
Not progressive.
Patient is a vague or annoyed informant. Is not as good an informant as he is a complainer.
Dramatic, hard-to-believe or embellished tale. (Has he read a text book about head pains?) Gets along too well for the excruciating distress complained of.
Constant, continuous distress. "Nothing helps."
Invalidism, more than facts account for.
Low distress tolerance. Gives up easily.
Self-concern, introspection. Insufficient interest in what he can do despite his complaints.
Inadequacy: poor work record.
Attitudes: chip on shoulder, "fed up," "wise guy."
Alcohol abused.
Recurrent use or reliance on codeine or morphine. Excessive use of barbiturates, bromides.
Chronic, undissipated emotional states and physiological concomitants; palpitation, anorexia, insomnia, compulsiveness, et cetera.
Inconsistencies in story, too many changes. Evidences of suggestibility.
Objective findings are few or not convincing. (Findings at hand explain patients' distress only with difficulty and may well be unrelated and coincidental, e.g., chronic prostatitis).
Precipitating and aggravating factors are vague, nondescript. Patient reveals suggestibility when questioned about them. Emotional factors loom large. May make a flat denial that anything aggravates or precipitates.
Vague, ill-defined *distress* or not actually a *headache* or *pain.*
"Tired feeling" in head, dizzy-like, foggy or logy feeling; hang-over; sore scalp; viselike, pressure, heavy or tight band feelings. "Drawing" sensations, expanding or "pushing out" feelings. Bizarre descriptions.
Relief: usually none whatsoever. "Old time" remedies such as vinegar compresses, "liver pills"; faith cures, chiropractic; use of alcohol.
Litigation and compensation problems.

Management

Management of recurrent headaches may include the following approaches: (1) etiological, (2) analgesic, (3) pharmacological, (4) physiotherapeutic, (5) blaming heredity, (6) psychosomatic.

Etiological.—Remove the cause. It has been indicated, however, that the etiology of recurrent head pains is complex. We are often confronted not with a single etiology. At times it appears that a single etiological condition sets off several others. For instance, it is not uncommon to unravel a sinusitis, then to find scalp and neck muscle spasm or a cranial nerve neuralgia which carry on.

There is no reason why a patient with migraine cannot develop a brain tumor. A hypertensive may also have a maxillary sinusitis. A patient with a chronic subdural hematoma may be a psychoneurotic of long standing. Organic conditions and emotional states do not exclude one another. They may co-exist or wax symbiotically.

If a singular approach does not bring results it is well to be broadminded. Missing pieces of the jigsaw puzzle must be sought. To treat sinuses or emotions or allergies week after week with only equivocal results is indication enough that a different approach is needed.

Analgesic.—Aspirin, phenacetin and similar mild, non-narcotic analgesics have a place in tiding the patient over rough spots. These may be combined synergistically with one of the rapidly acting barbiturates (e.g., nembutal grains ½ to 1½) or bromides. Frequent use of any analgesic is not without dangers.

The use of codeine, morphine, dilaudid and other analgesics of this class is to be avoided excepting as emergency measures in very severe headaches. It is the rare headache that requires such medication. The chance for addiction to develop among headache patients is very real and particularly dangerous in migraine and functional types.

Another method of analgesia concerns injections of novacaine into nerves (e.g., great occipital nerve, supra-orbital nerve) or merely infiltrating the painful area.

Pharmacological.—With the knowledge of what ergotamine and histamine may do to the vascular tree, investigators have sought other chemicals which may brake the underlying pain-producing mechanisms. It must be admitted that many of these drugs are given empirically. They may be given orally or parenterally, at the very onset of a headache or as a daily routine to note effects on the recurrent pattern.

The following are some of the drugs used. They are usually given in smaller doses and gradually increased to test their full effects. At times they are increased almost to point of tolerance. Some are gradually increased with the idea of "desensitization" to some unknown noxious physiological occurrences. Histamine and prostigmine are examples.

Ergotamine tartrate ("Gynergen"): 1 mg. tablet sublingually; 0.5-1.0 mg. subcutaneously.[16]

Prostigmine hydrobromide: 15 mg. tablets by mouth; 1 mg. subcutaneously.[11,13]

Benzedrine sulphate: 5-15 mg. doses by mouth; 2.5-10 mg. subcutaneously.[8]

Atropine sulphate: 0.45-.09 mg. (grains (1/150-1/75) by mouth or subcutaneously.

Dilantin (diphenylhydantoin, sodium): 0.1 gram by mouth three or four times daily, before meals. (May be worth a trial if the electro-encephalographic tracing is very abnormal or if the headaches have an episodic, paroxysmal character.)

Ephedrine sulfate: 15-50 mg. by mouth 10-25 mg. subcutaneously.

Nicotinic acid: 25-100 mg. by mouth; 10-50 mg. subcutaneously.[3,7,17]

Histamine: desensitization program, beginning with 0.03 mg. subcutaneously and gradually increasing dose to 0.1 or more mg. over a 10-20 day period. Histamine has also been given intravenously, 1.0 mg. in 250 c.c. of saline, at a slow rate, repeated several times a week.[3,4,5,9]

Caffeine: .5-1.0 gram of caffeine citrate by mouth; .5-1.0 gram of caffeine sodium benzoate subcutaneously or even intravenously.

Aminophyllin: .25-.50 grams subcutaneously or intravenously.

Thiocyanates: .3 grams per day of sodium or potassium salt by mouth. After the third day, reduce dose to maintain blood serum level of 8-12 mg. per cent thiocyanate.[10]

Electrolytes: large intake (by mouth) of calcium lactate (3 parts) and potassium chloride (1 part). It is possible that the parenteral route of administering Ca and K ions could be used also.[14]

Oxygen inhalation: medicinal oxygen is inhaled with a mask at the very onset of an attack.[1] It should be continued for thirty to sixty minutes, or longer.

The above drugs are sometimes combined with analgesics or barbiturates. The dangers of shot-gun preparations and unscientific homeopathy are evident. It is often impossible to evaluate the role of the physician's conviction and patient's suggestibility when a "potent" drug is administered. This somewhat blind pharmacological approach often ultimately aggravates functional headaches because:

1. It avoids getting down to fundamental causes and needs for adult adjustments.

2. It "fixes" any psychoneurosis by calling repeated attention to it and treating it as if it were "organic."

3. It may entail hospitalization, hence encourage invalidism.

Physiotherapeutic.—This is of particular value in headaches of scalp and neck muscle origin. It should be kept as simple, homemade and undramatic as possible: heat, simple massage, a warm shower or sitting in a tub full of comfortably warm water for half to one hour.

Other Methods.—Dehydration to a moderate degree may be tried. Limiting fluid to 1000-1200 c.c. daily should suffice. In addition, mild diuretics and saline purges may be used.

Morning headaches may be relieved by elevating the head of the bed 18 to 24 inches on blocks.[2]

The endocrines are also tried but again this approach sometimes appears quite empiric despite various attempts at explanation.[6] Even modified insulin "shock" therapy has been used in an attempt to revise the autonomic mechanisms at fault.[15] There is no harm in small doses of thyroid, testosterone, or estrogenic substance provided the pitfalls outlined under the pharmacological approach are thoroughly appreciated.

Hereditary.—Heredity is too often invoked and formulated to the patient as a "cause" for his distress. If the mother or an uncle had headaches, then the condition is often pounced upon as hereditary. It is an impractical straw at which to clutch and is often the essence of poor mental hygiene:

1. The patient is impressed by heredity as an overwhelming fate. He may well inherit all the liabilities of the family tree then. Resignation, hopelessness and excuse making do not lead to any betterment.

2. It avoids getting down to fundamental causes particularly if the headache is of emotional or psychoneurotic origin.

3. There is the ready interpretation that children will have this condition. The fear and expectation may aid the development of such pattern of complaining or expressing emotions. Such family patterns are as commonly perpetuated as are family tastes and traditions.

Psychosomatic.—Many headaches are physiologically bound to the patient's vegetative nervous system, emotions and personality. This does not necessarily mean that they are "neurotic." Chronic states of emotion have a great deal to do with smooth and striated muscle tonus, vascular tonus and secretory activity throughout the head and neck.

Some people express grief, anger and so on differently and are not necessarily neurotic. Emotional changes may overflow into certain vegatative circuits and be manifest in disguise because the sensations then appear referable to a certain organ or system. Many patients can describe how unwept tears of sadness or anger cause pain around the eyes, temples or maxillary region.

The management of headaches often calls for a knowledge of "the physiology of people." It is often as important to evaluate a mother-in-law at home as it is to ponder over some cervical arthritis. It may be as important to know that a patient is unusually sensitive or perfectionistic or full of medical misconception as it is to know that he has a slight hypertension.

As with a great number of other conditions in medicine, it is as important to know the host and his reactions as it is his disease. We cannot be limited to inquiry concerning: What is the headache that this patient has? We must know: Who is the patient who has the headache? What is *his tolerance* to emotional strain? What is *his reaction* to it? Generalizations are of no help. All heart conditions are not myocarditis. All non-organic headaches are not migraine or psychoneurosis.

These are cases wherein a patient must be surveyed not as an isolated cerebral-vascular preparation, but rather as a *whole* and individual physiology. Muncie[12] put it well when he reminded us that man is not a mere sum total of organs and systems, but is an integrate, not fully understandable or predictable from the anatomical and physiological data of the parts as such. Many physiological processes are long circuited by means of delayed reflexes through a wealth of experience and associated material of the individual. The patient himself is often interposed in the many reflex arcs which govern a great deal of his physiology. The origin of many headaches then is based on a highly individual physiology and pathology.

Summary

Cranial and intracranial arteries, the venous sinuses and their tributaries from the surface of the brain are sensitive to pain. Other structures supplied by the fifth, ninth and tenth cranial nerves and the first three cervical nerves are also pain sensitive.

The average headache has many facets which bear exploration. A carefully taken history often tells much about the diagnosis. It likewise gives an accurate method of checking the patient's consistency or significant developments which aid in diagnosis.

We have outlined etiologies. We are fortunate when we find a headache due to one extricable or counteractable cause.

The etiology of many headaches is complex. The individual concerned is interposed in the reflex arcs and pathology which give rise to distress. For this reason, careful history taking, observation and knowledge of the person who has the headache are important. This is not meant to imply that many headaches are "neurotic." Rather they are highly individual physiologic and pathologic reactions closely associated with the emotional and vegetative systems of the individual.

The specialist who believes that in his field only lies every healing virtue will relieve many headaches only by accident, by the help of time (the great healer) or by psychotherapeutic strokes which he himself does not recognize. Management therefore calls for broad etiological considerations and judicious use of analgesics and pharmacological mechanisms.

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STUDIES BY ARMY TAKE "Q" FEVER OUT OF MEDICAL CURIOSITY CLASS

"Q" fever, a pneumonia-like disease first described from Australia, apparently is endemic around the Mediterranean area. Scattered outbreaks have been reported among American troops in Italy, Greece and Corsica.

Study of these outbreaks by medical officers on the spot at an Army General Medical Laboratory, and by the Commission on Acute Respiratory Diseases of the Surgeon General's Office have thrown considerable light on this supposedly rare illness and established that it is (essentially) identical with the so-called Balkan Grippe which was epidemic in Greece in 1942.

The responsible agent has been identified as a very minute, red-shaped organism belonging to the family of rickettsia, similar to the organism which causes typhus fever. It has been impossible to establish the means of transmission, except that evidence suggests that the "germ" apparently is inhaled in infected dust.

In laboratory outbreaks the disease appears to be extremely infectious. Accidental infections have occurred in almost every laboratory where experimental work with this rickettsia has been conducted. It is likely to be confused with atypical pneumonia, of which the causative agent has not been identified. The syndromes of the two are somewhat similar.

A significant finding was that "fever rickettsia becomes much more virulent with successive passages through the blood of experimental animals." The malady comes suddenly with chills, sweats, aching muscles and frontal headache. The victim usually is incapacitated for two weeks or more.

Until recently the disease had been considered a medical curiosity.

BLOOD DYSCRASIA WITH AND WITHOUT ASSOCIATED "ATYPICAL LICHEN PLANUS"

Report of Four Cases

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THE term "atypical lichen planus" has been introduced to indicate a kind of dermatosis encountered among military personnel in the Southwestern Pacific area. In a few of these cases, there have occurred instances of a severe blood dyscrasia; similar hematologic changes have been encountered among patients who did not have the lesions of the skin. The chief features of this form of blood dyscrasia are progressive granulocytopenia, thrombocytopenia and, finally, anemia.

We wish to report four cases of this type of blood dyscrasia. In two cases the hematologic changes were accompanied by the cutaneous lesions of atypical lichen planus; in the other two cases they were not.

In the period May 20, 1944, until January 20, 1945, there had been admitted to our service 107 patients who had atypical lichen planus. Two patients of this group had associated hematologic changes. We have knowledge of four other patients whose condition was similar; no doubt other patients with this condition have been encountered in this particular theater. During the same period, two patients who presented a similar blood picture, but who did not have the cutaneous lesions, were seen.

Report of Cases

Case 1.—A chaplain of a local Air Forces unit, thirty-three years old, was first seen in the outpatient dermatologic clinic of an Army hospital on May 28, 1944. He complained of severe itching of the scrotum. He stated that this itching had persisted for about a month and that gradually it had become worse. On examination, moderate redness of the scrotum was found, with excoriation that had resulted from rubbing and scratching. The patient's skin otherwise was clear. He was advised to use calamine lotion with 0.5 per cent phenol, which was to be applied several times daily. He was cautioned to refrain from scratching.

On June 20, 1944, this patient again reported to the dermatologic clinic because of persistence of the itching of the scrotum, excessive dandruff and itching of the scalp. On examination, the scrotum of the patient appeared to be excoriated, as it had previously; but several small areas of weeping also were seen. Dandruff was excessive and small, crusted lesions were present throughout the scalp. The skin otherwise was normal. The patient stated that in other respects he felt well. He was instructed to shampoo the scalp daily, and was given a prescription for a scalp lotion and an antipruritic dusting powder to use on the scrotum.

This officer was not seen again until October 21, 1944, when he was admitted to the hospital in question because of weakness, dyspnea and fatigue. He stated that he had been in New Guinea since October 30, 1943. He had taken regularly, each day, the suppressive dose of 0.1 gm. of atabrine since October 24, 1943. He had been eating the usual army rations, had experienced no loss of weight and had felt himself in good health until his present condition came about. He said that in July, 1944, he had noticed a pigmented eruption on the upper eyelids. This eruption gradually had become more noticeable. Within a week or two after the appearance of the lesions on the eyelids, he had noticed a similar eruption on the ears and around the lower portion of the neck. He also had noticed, during the following few weeks, an eruption on the shoulders and over the back and chest. Late in August, 1944, a patch of weeping dermatitis had developed on the dorsum of the left foot; this dermatitis gradually became larger. The skin of the scrotum had continued to itch and had become weeping and crusted. The scalp had continued to itch excessively and the dandruff persisted.

The patient said that in the middle of September, 1944, about two months after the appearance of the eruption on the eyelids, he had begun to notice that he tired easily, lacked his usual physical strength and that dyspnea and fatigue would develop on slight exertion. These symptoms gradually became more severe, and he therefore sought medical attention.

On physical examination, this officer appeared to be very pale and enervated. He was otherwise well developed and well nourished. Dusky red to violaceous scaly plaques were present on the upper lids of both eyes. Violaceous scaly papules were present on both ears. Numerous small crusted lesions were scattered throughout the scalp; excessive scaliness and dandruff were present. Several violaceous, scaly, papular lesions about 5 mm. in diameter were present around the sides of the neck. Numerous dusky red, scaly, round to oval, macular patches 1 to 4 cm. in diameter were scattered sparsely over the shoulders, back and chest. Some of these lesions exhibited definite follicular hyperkeratosis, resembling goose flesh. The scrotum was very red, markedly eczematous and crusted. A large, dusky red exudative circinate patch of dermatitis about 5 cm. in diameter was situated over the dorsum of the left foot.

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There were no lesions of the mucous membranes. Results of the rest of the physical examination were negative. The liver and spleen were not palpable. Lymphadenopathy was not present.

On admission of this patient the initial blood count revealed 2,500,000 erythrocytes and 2,400 leukocytes per cubic millimeter of blood. The differential count was 16 per cent neutrophils and 84 per cent lymphocytes. There was no shift to the left. The blood smear disclosed moderate anisocytosis and poikilocytosis. Very few platelets were present. Reticulocytes were not found. The color index was 1.2. The mean corpuscular volume equaled 84 cubic microns. The mean corpuscular hemoglobin equaled 32 micromicrograms. The mean corpuscular hemoglobin concentration equaled 38 per cent. The blood sedimentation rate (Wintrobe method) was a fall of 54 mm. in one hour. The hematocrit reading was 21 per cent. The clotting time was 25 seconds. The bleeding time was 1 minute 45 seconds.

The diagnosis of atypical lichen planus with granulocytopenia was made. The patient was advised to cease taking, daily, the customary tablet of atabrine.

Blood was transfused repeatedly to the patient, and liver extract was injected intramuscularly. Ascorbic acid, thiamine and multivitamin capsules were administered orally.

On October 26, 1944, five days after the patient had been admitted to the hospital, his erythrocyte count had decreased to 1,950,000 and the leukocyte count to 2,150, per cubic millimeter of blood, with a differential count of 16 per cent netrophils and 84 per cent lymphocytes On November 1, 1944, the eleventh hospital day, the blood count revealed 2,900,000 erythrocytes and 3,100 leukocytes per cubic millimeter of blood. The differential count was 15 per cent neutrophils and 85 per cent lymphocytes.

Clinically, the patient felt much improved. He had exhibited no hemorrhagic phenomena. There was no change in the lesions of the skin. He was evacuated by air to the United States, leaving the hospital in question on November 2, 1944. By means of information coming to our attention at a later date, it was learned that this chaplain had died of blood dyscrasia about two weeks after he had reached a hospital in the United States.

Case 2.—A corporal in the Quartermaster Corps, thirty-one years old, was evacuated to the hospital in question on January 6, 1945, from a forward installation because of a severe eruption of the skin. He had arrived in New Guinea on April 7, 1944. He stated that he had been eating the usual army rations and had lost no weight. He had taken the usual suppressive dose of 0.1 gm. of atabrine daily since April 1, 1944.

This soldier stated that on about October 25, 1944, an eruption had developed on the inner aspects of the upper part of the thighs adjacent to the scrotum. This eruption had been treated as a fungous infection, but had not entirely abated. In mid-November, 1944, he had noticed an eruption on the wrists and forearms, and shortly thereafter, on the backs of the hands. During the next six weeks eruptions appeared on the face, neck, trunk and both lower extremities. In late December, 1944, about two and a half weeks before he had been admitted to this hospital, he had noticed that he tired easily, lacked his usual strength, and that dyspnea and fatigue developed on physical exertion. These symptoms had become progressively more noticeable up to the time of his admission to the hospital.

On physical examination, the pallor of the patient's skin was apparent in spite of the yellowness caused by the taking of atabrine. He was otherwise well developed and well nourished. The skin presented generalized dermatosis characterized by violaceous, smooth to scaly, papular and nodular lesions scattered over the entire body, but most pronounced on the buttocks and legs. Most of these lesions were 3 to 10 mm. in diameter, round to oval, many with their long axis tending to follow the lines of cleavage, especially around the neck and trunk. There were similar violaceous plaques on the eyelids and ears, as well as on the face. An ulcerated lesion about 1 cm. in diameter was situated on the lower lip. This lesion was covered by a bloody crust. One small ulcerated lesion was situated inside the lower lip. Results of the rest of the physical examination were essentially normal. Lymphadenopathy had not occurred, and the liver and spleen were not palpable.

Erythrocytes numbered 1,840,000. The percentage of hemoglobin was 40. Leukocytes numbered 2,450. The differential count was 32 per cent neutrophils and 68 per cent lymphocytes. Platelets were markedly decreased. Reticulocytes were not found. The bleeding time was 7 minutes, and the clotting time was 3 minutes and 30 seconds. The sedimentation rate (Wintrobe method) revealed a fall of 75 mm. in one hour. The hematocrit reading was 18 per cent. The icterus index was 7.4 per cent. Total blood proteins were 6.3 gm. Reaction of the Kahn flocculation test was negative. The blood type was 0. Thick blood smears made and examined regularly were found not to contain malarial parasites.

The diagnosis of atypical lichen planus with agranulocytopenia was made. The patient was advised to discontinue the use of atabrine immediately.

Whole blood was transfused thirteen times, in amounts of 500 c.c. at each transfusion. This was done between January 7 and February 3, 1945. The patient also received daily intramuscular injections of liver extract. Ascorbic acid, thiamine and multivitamin capsules were given orally.

On January 9, 1945, sternal puncture was done. Fluid which resembled venous blood was removed. No bone marrow cells were seen on the smear; cell counts of the fluid removed were similar to those of the blood.

The number of erythrocytes increased, but the number of leukocytes decreased during the first week of this patient's hospitalization. On January 11, 1945, five days after the patient had been admitted to the hospital, the erythrocytes numbered 3,400,000 and leukocytes, 2,000. The differential count was 8 per cent neutrophils and 92 per cent lymphocytes. Platelets were very rare. At this time bleeding began from the lesion on the lower lip and from the gums. During the next two weeks, however, the blood picture improved and the bleeding stopped. On January 15, 1945, erythrocytes numbered 3,350,000 and the hemoglobin content was 80 per cent. Leukocytes numbered 3,600. The differential count was

12 per cent neutrophils and 88 per cent lympocytes. On January 30, 1945, twenty-four days after the patient had been admitted to the hospital, erythrocytes numbered 4,500,000 and leukocytes, 3,500. The differential count was 25 per cent neutrophils and 75 per cent lymphocytes.

Clinically, the patient was much improved. There was no change in the condition of his skin. He was evacuated to the United States by air, leaving the hospital in question on February 3, 1945. Unfortunately, we were unable to obtain additional data in this case.

Case 3.—A corporal, twenty-five years old, was admitted to the hospital in question on July 13, 1944. From March 10 to June 10, 1944, he had been hospitalized because of epidemic hepatitis. He had been discharged to return to duty, and seemed well. Both prior to and after the episode of hepatitis he had received no drugs nor was he exposed to any known toxic products. Each day he had taken 0.1 gm. of atabrine for about eight months. On June 25, 1944, painful, bleeding gums and fever had developed. The patient had been admitted to his local hospital on July 3, 1944, at which time leukocytes had numbered 3,600, of which more than 90 per cent were lymphocytes. In the course of the next two weeks, the number of leukocytes had decreased to 1,800, of which 14 per cent were neutrophils and 86 per cent were lymphocytes. Few to no blood platelets had been seen on the various blood examinations. During this period blood had been transfused to the patient six times. When he was admitted to our hospital his temperature was 105° F. (40.6° C.). Many subcutaneous and mucosal hemorrhages were present. Free bleeding from the nose developed; it was controlled by packing. Later, the patient passed small black stools, the color of which was caused either by swallowed blood or by oozing from the gastro-intestinal tract. Erythrocytes numbered 2,650,000 and leukocytes, 1,000. The differential count was 1 per cent polymorphonuclear cells, 97 per cent lymphocytes, and 2 per cent monocytes. Results of other studies of the blood, including bleeding and clotting time, and fragility tests, all were normal. Sternal puncture revealed no regeneration of cells. The diagnosis of agranulocytopenia was made. The taking of atabrine was immediately discontinued. Penicillin was administered intramsucularly; whole blood was transfused repeatedly, and vitamin supplements were given; but all to no avail. The patient died on July 22, 1944, nine days after he had been admitted. During the period of hospitalization at our hospital, the patient's blood count had rapidly diminished. On July 21, 1944, the day before he died, the erythrocytes had decreased to 1,980,000, and the leukocytes to 450, per cubic millimeter of blood. The differential count was 1 per cent polymorphonuclear cells and 99 per cent lymphocytes.

Necropsy revealed no significant changes other than numerous large hemorrhagic zones in the lungs, bleeding into the renal pelvis, and a hemorrhagic region in the ascending colon. The liver was somewhat enlarged, but histopathologic study showed only acute passive congestion and cloudy swelling. Study of smears of bone marrow revealed the same information that had been obtained antemortem; namely, no evidence of cellular regeneration. There was no apparent residuum in the liver from the preceding attack of hepatitis.

Case 4.—An officer, forty-one years old, was admitted to the hospital in question on November 23, 1944. He had seemed well until the day previous to his admission, when he had noticed weakness and minute subcutaneous hemorrhages distributed over the tibia and in the mucous membrane of the mouth. He had suffered no recent illnesses and had taken no medication other than the daily tablet of 0.1 gm. of atabrine for the preceding six months. At the time of his admittance, erythrocytes numbered 3,200,000 and leukocytes, 2,400, per cubic millimeter of blood. The differential count was 3 per cent polymorphonuclear cells and 97 per cent lymphocytes. The hemoglobin, as estimated by the Sahli method, was 70 per cent. The erythrocytes were normocytic. The clotting time and bleeding time were normal. The diagnosis of agranulocytopenia was made and the taking of atabrine was discontinued. In spite of the fact that blood was transfused almost daily, and liver extract and vitamin supplements were administered, the leukocyte count decreased. On the day prior to the patient's death, erythrocytes numbered 2,630,000 per cubic millimeter of blood, with a hemoglobin content of 60 per cent. Leukocytes numbered 400 per cubic millimeter of blood, with a differential count of 5 per cent polymorphonuclear cells and 95 per cent lymphocytes. Platelets were not found. Petechiae had appeared in various places over the body and in the mouth. The patient gradually lapsed into coma and died on December 2, 1944, nine days after he had been admitted.

Necropsy revealed multiple hemorrhages throughout all the organs. Studies of bone marrow showed a moderate increase in the percentage of adult erythrocytes and normoblasts. A few myelocytes and an occasional megaloblast were found. A significant number of bizarre-shaped nuclei and multinucleated cells were observed.

Summary and Conclusions

Four cases of severe blood dyscrasia, characterized by agranulocytopenia, thrombocytopenia and anemia, have been reported. In Cases 1 and 2 there were present, in addition to the hematologic changes, lesions of the skin characteristic of atypical lichen planus. The patient in Case 1 had rather mild involvement of the skin, whereas the patient in Case 2 had extensive changes in the skin. There was no change in the dermatosis during hospitalization of the patients. The blood picture in both cases showed practically the same changes; namely, progressive granulocytopenia and thrombocytopenia with anemia.

The patients in Cases 3 and 4 presented the same hematologic changes, but did not have le-

(Continued on Page 620)

CALYCEAL DIVERTICULUM

E. R. STERNER, M.D., HAROLD O. PETERSON, M.D. and KANO IKEDA, M.D.

Saint Paul, Minnesota

Dr. Harold Peterson: Calyceal diverticulum is a subject about which very little is known. It has been described by a urologist by the name of Prather[1], and he has given a good description of three cases involving operation and has obtained histological evidence which pretty well proves the diagnosis. In the cases that we are presenting, we have no microscopic sections, but we have roentgenograms which are identical with those that Prather had, and that is why we are showing them. We hope that in the future we shall find out at operation whether or not our diagnoses are correct. For a number of years I have been interpreting this condition as a cyst of the kidney which, for some reason or other, has ruptured into the calyx. When we do, either an intravenous or a retrograde pyelogram, this cyst becomes filled with the contrast media. We do not see this picture very often, although we see solitary cysts of the kidney which do not connect with the calyx, quite often. In Prather's article, he shows sections of the lining of this cyst and in all three cases there is a transitional cell epithelium lining the cavity, which you would not find, as I understand, in a simple kidney cyst. All of his patients had back pains, not very severe, but aggravating, gnawing back pain, and he operated on all of them and excised the cyst. The cyst connects by a narrow tract with the calyx, and he stretches that tract and then closes over the defect. He apparently obtained pretty good results.

I want to present all of our cases illustrating this condition. As I have said, none of these patients has been operated upon. Therefore we do not have any proof of the diagnoses from a pathological standpoint. We do not have much history on most of them either.

The first case was a patient of Dr. Donohue's and, as I recall it, was a boy who was injured playing football and developed hematuria which was the reason for this study. Figure 1, *A* represents what we found on intravenous urography. There is a smooth, round cavity which apparently connects with the tip of a calyx, and which I thought at the time was probably a simple kidney cyst which had ruptured into the calyx. This appearance agrees exactly with Dr. Prather's description of calyceal diverticulum with transitional cell epithelium lining the cavity. This patient had two examinations several weeks apart, and the cyst was a little smaller the second time (Fig. 1, *B*). What that means I do not know.

A Physician: Do you have a retrograde on that one?

Dr. Peterson: No, not on that one.

In the second case there was a retrograde examination by Dr. Foley. This patient had dull pain in the right kidney region for three years. At the time these studies were made, there were 8 to 10 red cells in the urine and up to two pus cells. That was all the urinary findings. Guinea pigs were inoculated with urinary sediment and no tubercle bacilli were found. The final urologic diagnosis was a renal cyst. I think there are probably two of them shown in Fig. 2, *A*. You can see an overlapping shadow. The smaller shadow might be a loculation of the larger one. At least, there are two overlapping pockets contacting the upper calyx. Strangely enough in the three cases that were reported in Prather's article the diverticuli were all in the upper pole and in all of our cases are toward the upper pole and none in the lower pole. Prather mentions that it is important to obtain straight lateral views, if operation is contemplated. The cysts are not very large and may be difficult to locate on exploration without a lateral view to show whether it is anterior or posterior in location. Figure 2, *B* was made after the catheters had been removed and the dye had drained out, except for a residuum in the cyst cavity. I do not know just how many minutes later this was taken.

Dr. Kano Ikeda: How about the calyces around it?

Dr. Peterson: They are all a little ragged. I think they are a little spastic, and there is a little bit of pyelorenal backflow which makes them look a little roughened.

The third case is a little bit different in that there is not a very large cavity. This patient has been followed for about three years without any change in the size of the cavity. The tract leads out from the calyx to a little puddle toward the periphery of the kidney. I thought originally that this probably was the residual of an old healed abscess, but now I think a renal diverticulum is more likely. Films were made in 1940 and the next examination was made in 1943. The film taken in 1943 (Fig. 3), taken two to three years later is identical.

The fourth patient had back pain. The urine was normal. This back pain had started on two occasions as an ureteral colic, persisted as kidney pain for several days and then gradually wore off. The first attack was six years ago after which the first films were made. Another attack followed a period of no pain and then the pain gradually wore off. Prather says in his paper that these diverticula are frequent sites for the formation of stones because of the poor drainage from them. It is possible that this patient had stones which were the source of her colic. The x-ray (Fig. 4, *B*) shows a collection of little faceted stones all fitting together. At first glance, you would be practically certain of gallstones. You would not suspect kidney stones in a little cluster like that, and the location agrees pretty well

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Presented at the General Medical Staff meeting of the Charles T. Miller Hospital, Saint Paul, Minnesota, April 3, 1945.

with the gall-bladder region. This is a retrograde urogram and here is the little sinus tract leading up to the collection of stones and the dye now has surrounded this little cluster of stones which is out toward the periphery of the kidney (Fig. 4, *A*, *B*). I think this is a good example of one of these diverticula with formation of stones within it.

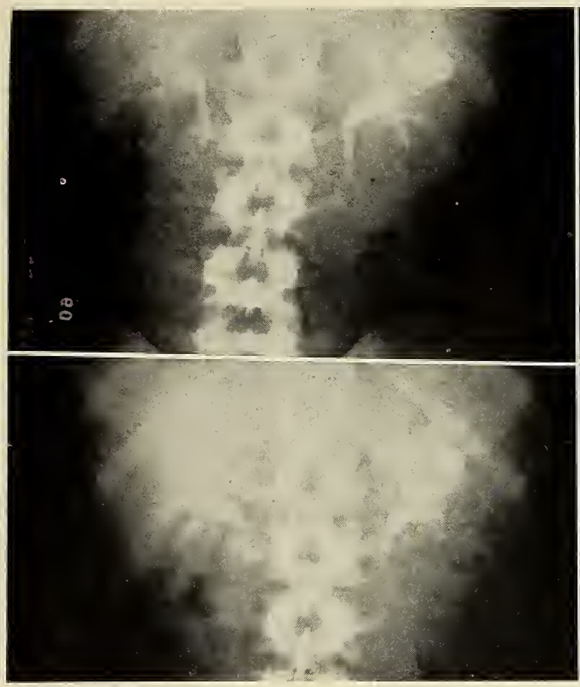

Fig. 1. *A* and *B*.

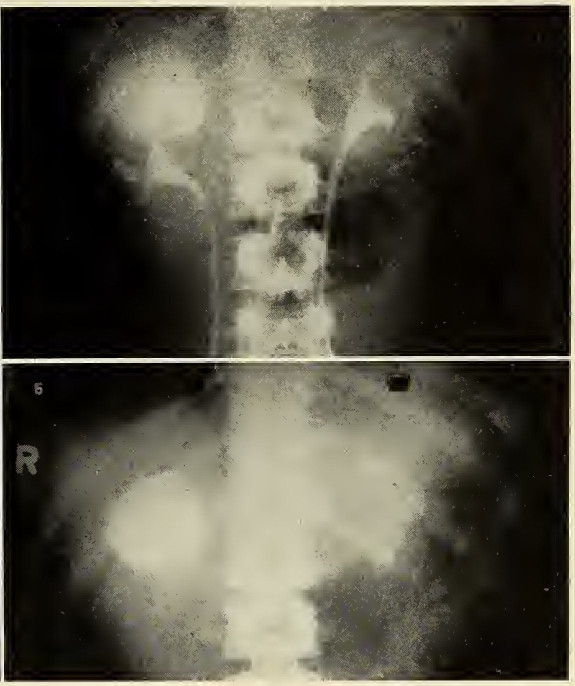

Fig. 2. *A* and *B*.

The fifth case probably comes into this group, although it is not as well established as the others. This case shows a large calculus in the upper part of the kidney. The first film was made in 1937. Here is another film made in 1942, five years later. The calcification is growing and the lateral view shows it to be posteriorly in the kidney region. We have an intravenous urogram but no retrograde. There is no evidence whereby you could say that dye got up around the stone. It looks perhaps a little more hazy, as though there was some contrast media around it, but it is not definite. Because it is located toward the periphery of the kidney, it is not likely to be a renal stone in the usual sense, but it could very well be a stone in a diverticulum of the kidney (Fig. 5).

Discussion

Dr. Frederic E. B. Foley: I do not know much about calyceal diverticulum. Prather's paper gave an excellent description of the gross lesion, clinical diagnosis, and surgical treatment. It did not contain definite histologic or histopathologic proof that the cavity is a diverticulum of the calyx in the restricted meaning of the term "diverticulum." That would require that the lining cells of the diverticulum and its communicating passage with the calyx be identical with the epithelium of the pelvis and calyces. Prather did not give convincing evidence that they are identical. The cells of the papillary ducts and the cells of the calyces, in fact the cells of all the excretory channels from bladder to distal convoluted tubule, are derived from the same structure: the Wolffian duct. The differentiation between them is not great. So, it becomes a rather hairsplitting question to say whether the pressure affected cells of these cavities are calycine cells and that the cavity, therefore, is a diverticulum of the calyx or that they are the more differentiated cells of papillary ducts or other parts of the tubular system, and that the cavity, therefore, is a cystlike dilatation communicating with the calyces. It is a question for answer by the histopathologist or embryologist rather than the clinical urologist.

I would like to ask Dr. Ikeda and Dr. McCartney: If an individual papillary duct were obstructed, not unlike the back pressure on all ducts that occurs in hydronephrosis, and became dilated, could you with certainty distinguish its pressure-altered cells from the epithelial cells of the calyces? I doubt it.

Dr. James McCartney: I do not think you could, all the time, because you would expect to have a single layer of epithelium, whereas if it is the pelvic epithelium you would expect to have multiple layers. Now, undoubtedly in one of these things, as in cysts elsewhere, the tension may be so great that the epithelial lining may become completely destroyed, and all you apparently have is simply a fibrous wall. You see that rather commonly in the larger cysts of the breast, and you see it not infrequently in some of the cystomas of the ovary, some with good epithelial lining and others with apparently no epithelial lining at all. But if it is a true pelvic epithelium, then I should say you would have to have multiple layers before you would be certain.

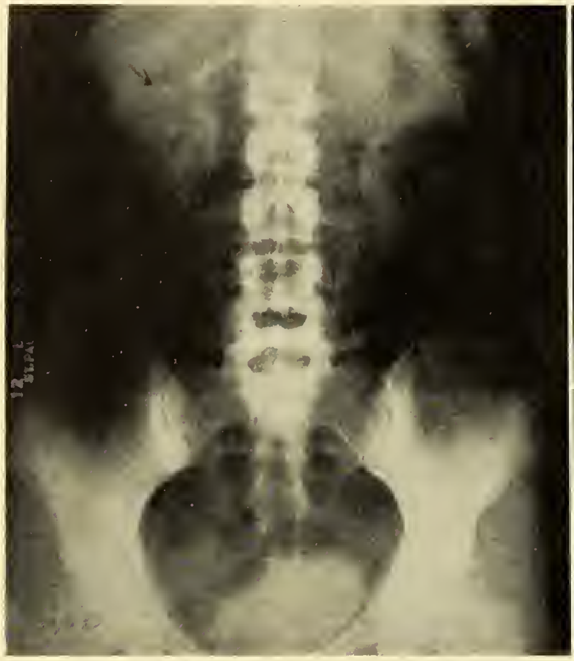

Fig. 3.

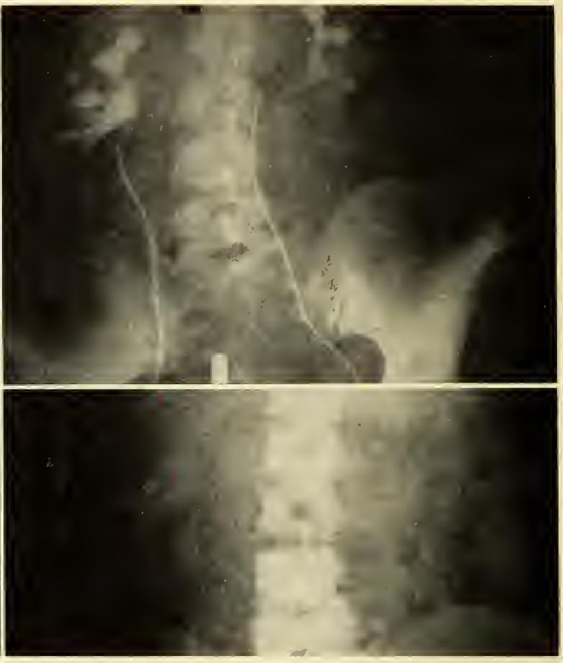

Fig. 4. *A* and *B*.

Dr. Foley: I am not so sure that it is a good term, calyceal diverticulum. I am not convinced that it truly describes the lesion, but I will join Dr. Peterson in use of the term, for it is more convenient than "renal cavity communicating with the pelvis."

Dr. Philip Donohue: I brought a very brief history of Case I of Dr. Peterson's series, a young man, 18 years of age, who on the 9th of October was playing football and was kicked in the left upper abdomen, but was able to continue playing, and nothing was brought to his mind until the middle of the game between the halves. When he voided, he noticed that his urine was very bloody, and I saw him at the suggestion of a doctor because of rather gross hematuria. Now, that hematuria had cleared up by the time I saw him the next day. He had never had pain in his flank. Of course, he was only 18 years of age and possibly later on he would have acquired some symptoms. We have a film that was made about three months later. The only point that I have in mentioning about this patient is that these cavities have changed. This one is decidedly smaller. I don't say that this can be proven to be traumatic, but if this cavity should disappear, it might have a point. I think it ought to be watched before it is diagnosed or settled as a proved diverticulum. You don't agree with that, I believe.

Dr. Peterson: If they disappear, it would be rather bad.

Dr. Donohue: When he was last seen, sometime in January, or two months later, he was trying for enlistment. He was without symptoms. He had a few red cells in his urine. Prather himself mentioned the fact that the subject was controversial as to etiology but I don't believe as to treatment. Dr. Foley didn't mention this, but I might, that it is true that such cavities are found in people with symptoms such as Dr. Peterson has described. The stones are frequent complications. It has been feasible to remove the portion of the kidney when the space is located at the upper or lower pole by a so-called heminephrectomy. In Prather's case, the space was in the area between the calyces in the middle of the kidney, and he seemed to excise the cortex of the kidney and obliterate the gap by suture.

Dr. Foley: The kidney is formed from two structures. From the renal blastema are formed the glomerulus, proximal convoluted tubule, loop of Henle, distal convoluted tubule, and connecting or junctional tubule. From the Wolffian duct are formed the ureter, pelvis, calyces, papillary ducts, and collecting tubules. For a period, there is no communication between the structures derived from the renal blastema and those derived from the Wolffian duct. Union of the two at the junctional tubule completes the secretory unit: the glomerulus and the passageways from it to the pelvis.

Failure of this union to occur makes a very comfortable armchair way of explaining congenital polycystic kidney.

In a schematic way this is what happens. (Drawing).

Vesicles develop in the renal blastema. A knuckle or loop of blood vessel pushes against the vesicle invaginating the wall of the vesicle over the blood vessel like the lining of a cap. As the invagination progresses, the loop of blood vessel elongates into multiple loops or folds forming a tuft. The invaginated wall of the vesicle finally completely covers the tuft down to its narrow neck formed by the afferent and efferent limbs of the vascular tuft as they respectively enter and leave the invagination. In this way, the glomerulus is formed.

At the narrow neck of the vascular tuft or glomerulus, the invaginated layer of cells from the vesicle, which covers the vascular tuft is continuous with the surrounding non-invaginated wall of the vesicle, just as the lining of a cap is continuous with the outer material of the cap itself. The non-invaginated wall of the vesicle—the outer layer of the material of the cap—forms Bowman's capsule. From the outer layer of the cap the proximal convoluted tubules, loop of Henle, distal convoluted tubules, and junctional tubules develop as a passageway continuous with the space between the glomerulus and the glomerular capsule—the space between the lining of the cap and the outer layer of the cap itself.

The ureteral bud from the Wolffian duct grows into the renal blastema. Its stalk forms the ureter and pelvis. As the bud grows, there is a dichotomous branching of it and cleavage of the branches from each other. The primary branches form the major calyces, the secondary and subsequent branches form the minor calyces, papillary ducts, and collecting tubules.

Union of the passageways derived from the Wolffian duct with those derived from the renal blastema occurs at the connecting or junctional tubule. Failure of this union to occur is a not definitely proved explanation for the formation of renal cysts. Congenitally small caliber at the point of union—in fact, anywhere along the tubular passageway from pelvis to glomerulus—with resulting elevated pressure and dilatation between the point of narrowing and the glomerulus would be a not proved explanation for "congenital calycine diverticulum." Narrowing of the passageway in post-fetal life as a pathologic process would be a not proved explanation for "acquired calycine diverticulum."

Dr. Ikeda: I have never recognized this condition either at autopsy or in surgical specimens. From time to time, I have seen intrarenal cysts, usually multiple but sometimes single, 5 to 20 mm. in diameter with a thin, smooth, fibrous inner lining, occurring within the cortex of the kidney, without protruding on the outer surface as in a congenital solitary cyst. I have never been able to demonstrate a communication between such a cyst and the adjacent calyx. Furthermore, on section, such a cyst is lined by a layer of flat epithelium. I am convinced from reading Prather's article, seeing the histologic picture of the walls of the cysts he reported, and listening to Dr. Peterson's presentation, that there is such an anatomical and clinical condition as a diverticulum of the renal calyx, in the same sense as the diverticulum of the urinary bladder, the colon, the esophagus, or any other hollow or tubular organs of the body. I can imagine that some of these diverticula may become closed off by an inflammatory process at the neck and become retention cysts, perhaps, to be finally obliterated or filled in by organized exudate or scar.

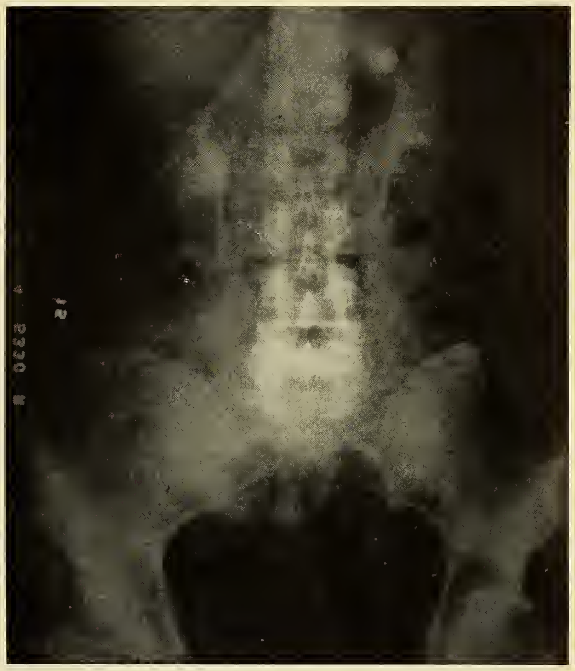

Fig. 4.

None of us present here tonight has seen a proven case of calyceal diverticulum. We have no positive proof that these cases represent this condition. However, in the light of the article by Prather, Dr. Peterson's interpretation of these roentgenograms appears to be reasonable, except in the Case I, in which the shrinkage of the cyst in so short a time is difficult to understand, unless it has developed a heavy inner coating of exudate or organized blood to reduce the size of the cavity.

Reference

1. Prather, George C.: Calyceal diverticulum. J. Urol., 45: 55-64, (Jan.) 1941.

METHIONINE

The amino acid, methionine, can now be synthesized and made available at a greatly reduced cost for medical use, more especially for the treatment of liver diseases. The synthetic preparation has all the valuable qualities of the natural methionine previously obtained from the organs of sheep and cattle and also from casein. This sulphur-containing amino acid has been found of particular value in the treatment of liver poisoning resulting from a variety of chemicals such as carbon tetrachloride, trinitrotoluene, arsenic, phosphorus and chloroform. The recommended dosage of four to six or more grams of methionine daily would require four to six or more quarts of milk or 120 grams or more of casin, an impractical amount. The announcement was recently made by U. S. Industrial Chemicals, Inc., of New York.

◆ CASE REPORT ◆

EFFECT OF ANTILUETIC THERAPY ON BUNDLE BRANCH BLOCK

LT. COL. D. E. NOLAN, MC, AUS, and CAPT. GEORGE W. PEDIGO, MC, AUS
Dayton, Ohio

Bundle branch block is most frequently due to coronary arteriosclerosis. Occasionally, syphilitic or diphtheritic myocarditis is responsible for this disorder of rhythm. Even rarer are such causes as tumors, trauma or abscesses. Aside from the functional type, due to myocardial fatigue such as that following bouts of auricular flutter without auriculoventricular block, and the toxic type due to digitalis or quinidine effect, they are not usually amenable to treatment. In the case we are reporting we believe the block was due to syphilis. The restoration of normal conduction after antiluetic therapy may be of interest.

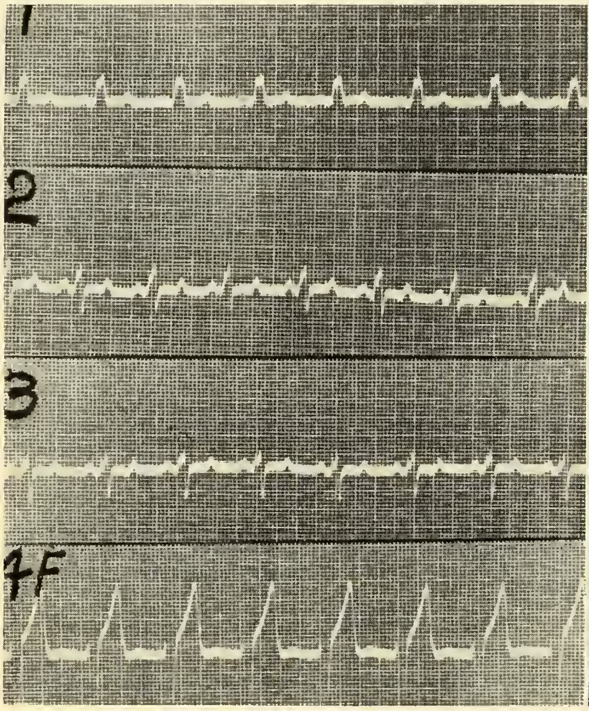

Fig. 1. Electrocardiogram showing left bundle branch block before treatment.

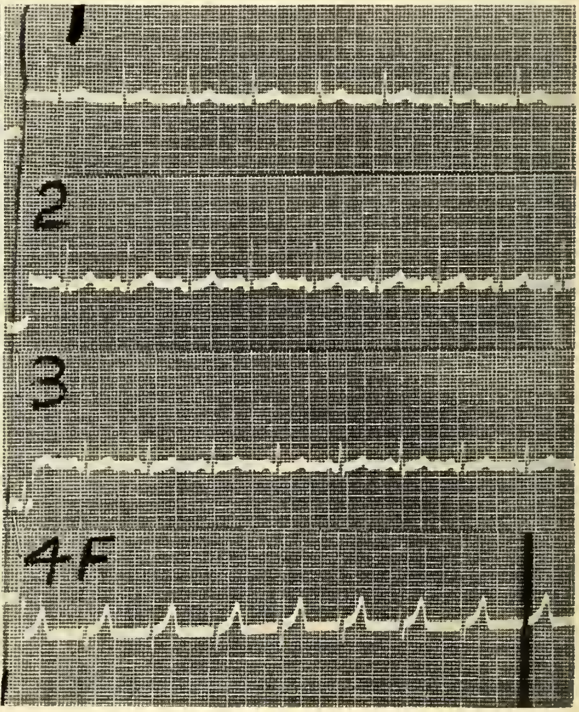

Fig. 2. Electrocardiogram showing return to normal rhythm after antiluetic therapy.

HB, aged fifty-four, negro carpenter, was admitted November 1, 1944 complaining of dizziness, staggering gait, and incontinence of urine of three years duration. He denied ever having syphilis, but our records reveal a positive blood Wassermann as far back as 1930. No complaints referable to the heart were elicited.

Examination revealed a well-developed, well-nourished, comfortable negro male with an ataxic gait. The pupils were irregular and did not react to light. Ocular fundi were normal. The ears, nose, mouth, throat, and neck presented no unusual features. The chest was clear and resonant throughout. Blood pressure was 100/74, pulse 96, temperature 98.6. Rhythm was regular, heart was not enlarged, no murmurs were heard. Tones were of normal quality. There was no cyanosis or edema. Radial and brachial arteries were thickened and tortuous. The peripheral circulation appeared normal. The abdomen was soft, no masses or tender areas were present. The skin, mucous membranes, extremities and joints were within normal limits. Knee kicks and ankle jerks were absent bilaterally. Abdominal, cremasteric, and upper tendon reflexes were normal. There was marked swaying in the Romberg position. Gait was the typical slapping tabetic type. Urinary incontinence was evident.

(Continued on Page 592)

From the Medical Service, U. S. Veterans Hospital, Dayton, Ohio.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
Mayo Clinic
Rochester, Minnesota

(Continued from May Issue)

Medical Societies

One of the earliest and most significant signs of the postwar change in the attitude toward their professional equipment and status was the effort toward organization of medical societies, and in this movement certain county medical societies of Minnesota antedated the resuscitation of the state medical society (first organized in 1853, revived in 1869). The physicians of the regular school in Fillmore County were among the first to organize, in October, 1866 (following the profession of Winona County by only a few months), and it is interesting that among the most active of the founders, probably the leader, and the first president of the Fillmore County Medical Society, was Dr. Refine W. Twitchell, of Chatfield, who during the Civil War had served four years as a surgeon in the Union Army.

The Fillmore County Medical Society.—In the *History of Fillmore County* that was published in 1882 is the following story of the county medical society. It is quoted here because in it there is inadvertent divergence from fact as to original membership and date of organization which recent research has established:

> FILLMORE COUNTY MEDICAL SOCIETY. This association was organized in the fall of 1862. The first meeting was at the office of L. Redmon, M.D., in Preston and about ten members constituted the society at that time. The objects were for mutual benefit, particularly to increase the medical knowledge and skill of the members.
>
> The first officers of the society were: President, R. W. Twitchell; Vice President, H. Wilson; Treasurer, A. H. Trow; Corresponding Secretary, G. M. Willis; Secretary, T. E. Loop. The other members were Lafayette Redmon, Luke Miller, J. M. Wheat, M. Downelly (sic), C. H. Robbins, R. L. Moore, A. Plummer, A. F. Whitman, H. Pickett, J. A. Graves, H. C. Grover, R. W. Hoyt and M. A. Trow.
>
> For several years the society was in an active condition. There was a regular fee bill and other accessories of such a society, and it had a vigorous growth and life, but the interest finally declined and in 1879 it passed into a moribund condition, from all outward symptoms. However, it may be a case of catalepsy or suspended animation, and the expectant treatment it is receiving may yet resuscitate it to conscious activity, in agreement with the axiom that physicians when sick are totally incapable of treating themselves. The last officers of the society, who hold over until their successors are appointed, were: President, R. L. Moore; Vice President, H. C. Grover; Treasurer, L. Redmon; Secretary, A. F. Whitman. These men are supposed to be regular M.D.s, although to avoid the monotony, the letters after each name are omitted.

The discrepancies regarding original membership that have become obvious are, first, that Milton A. Trow and R. W. Hoyt were mere boys in 1862 and even in 1866 and, second, that R. L. Moore, A. Plummer, A. F. Whitman and H. C. Grover did not enter the county until the late sixties. Of the others, Luke Miller,

M. Donnelly, H. Pickett, J. A. Graves and C. H. Robbins, the last a medical graduate of 1866, although in the county and no doubt early members of the society, were not at the organizational meeting.

There are given here, because they are believed to constitute an authentic record, not previously compiled, official notices relating to the society over a period of its first years that were published in newspapers of Fillmore County. In the *Preston Republican* of November 9, 1866, appeared the following authorized account:

Preston, Minnesota, October 17, 1866.

In accordance with a call published by Dr. L. Redmon of Preston, the following named physicians, practicing in Fillmore County, met and organized, by calling Dr. A. H. Trow of Chatfield to the chair. On motion Dr. G. M. Willis, of Carimona, was chosen secretary pro tem.

Present: Dr. A. H. Trow, Chatfield; Dr. R. W. Twitchell, Chatfield; Dr. T. E. Loop, Spring Valley; Dr. J. M. Wheat, Lenora; Dr. H. Wilson, Carimona; Dr. G. M. Willis, Carimona.

On motion Dr. Twitchell was chosen president of the society for the ensuing year. Dr. Wilson was chosen Vice President, Dr. Loop, Secretary, and Dr. G. M. Willis, Corresponding Secretary. The following named gentlemen were appointed a committee to draft a constitution and by-laws, Drs. Wheat, Wilson and Trow.

On motion the Corresponding Secretary was instructed to correspond with the Corresponding Secretary of the State Medical Society, for the purpose of obtaining a copy of the constitution and by-laws governing that body.

Drs. Wilson, Trow, Loop and Wheat were appointed a committee to prepare a fee bill.

On motion it was resolved that a copy of these proceedings be printed in each of the weekly papers in this county for publication.

On motion the meeting adjourned to meet in Preston on the last Saturday in November at one o'clock p.m.

T. E. Loop, Secretary

Intervening notices were not observed, but in the same newspaper, issue of August 16, 1867, appeared the following statement:

FILLMORE COUNTY MEDICAL SOCIETY: Pursuant to a notice by the President, Dr. Twitchell, of Chatfield, the above society met at the office of Dr. Redmon, in Preston, on the 10th inst.

The President being absent, Dr. C. H. Robbins was elected president pro tem.

The society then proceeded to adoption of a constitution and by-laws for its government.

On motion Dr. Redmon was added to the committee on the fee bill, with instructions to report at the next meeting of the society.

On motion the president appointed Drs. Miller, Redmon and Trow as Censors of the society.

The following individuals were elected officers for the ensuing years: President, Dr. Twitchell; Vice President, Dr. Redmon; Secretary, Dr. Robbins.

The society adjourned to meet at Preston on the second day of the county fair.

T. E. Loop, Secretary. C. H. Robbins

The next statement, important in its details (changed here only slightly in spacing and in correction of a few obviously typographical errors) was printed in the issue of the *Preston Republican* of December 13, 1867:

FILLMORE COUNTY MEDICAL SOCIETY: At the meeting of the Fillmore County Medical Society, held at Preston, the 11th day of October, 1867, the following Fee Bill was unanimously adopted.

Counsel Fee, or medical advice according to circumstances	$ 1.00 to $ 5.00
Each visit	1.00
Each visit at night	2.00

In each case where the distance exceeds one mile, mileage to be added at the rate of 50 cents per mile.

OBSTETRICAL OPERATIONS

Natural Labor	6.00 to 10.00
Protracted labor	10.00 to 15.00
Instrumental labor	15.00 to 30.00

OPERATIONS ON THE HEAD

Operations with Trephine	10.00 to 20.00
Dressing each time	1.00 to 2.00

MISCELLANEOUS

Dressing cutaneous or superficial wounds, ulcers, abscesses, etc.	1.00 to 2.00
Opening small sinuses and abscesses	1.00
Operations for hare lip	10.00 to 25.00
Extirpation of tonsils	10.00 to 20.00
Hydrocele, radical operation	10.00 to 20.00
Hydrocele, palliation by puncture	5.00 to 10.00
Phimosis and Pharaphimosis	5.00 to 10.00
Paracentesis	5.00 to 10.00
Operations for Fistula in ano	10.00 to 20.00

HERNIA

Reducing hernia	5.00 to 10.00
Other cases under this head	25.00 to 75.00
Each dressing under this head	1.00

FRACTURES AND DISLOCATIONS

Fractures of humerus and dressings	15.00 to 20.00
Other fractures and dressings	10.00 to 100.00
Dislocation or fractures of fingers and toes with dressing	5.00

Extirpation of encysted or cancerous tumors	10.00 to 25.00
Cutting for stone in bladder	25.00 to 50.00
Cutting for stone in urethra	5.00 to 10.00
Postmortem examinations when ordered by coroner	15.00 to 30.00
Examination of Vaginum with speculum	3.00 to 5.00
Examination of lungs and heart with stethoscope	2.00
Office consultation	1.00
Malformations, operations for	15.00 to 50.00
Gonorrhea, simple	5.00 to 10.00
Syphilis	10.00 to 25.00
Operation for hemorrhoids	10.00 to 20.00

AMPUTATIONS

The shoulder, hip, breast, leg or thigh, fore and back arm	25.00 to 100.00
Amputation of fingers and toes	3.00 to 5.00

ANEURISMS

Operations for popliteal, femoral, inguinal, carotid and axillary aneurisms	30.00 to 100.00
Aneurisms of hand and foot	20.00 to 30.00

Compound fractures of all kinds one-half more than simple. Other chirurgical cases not here mentioned either to be proposed to the society for their decision, or to be charged as nearly to the tenor of this table as possible.

L. Redmon, Secretary R. W. Twitchell, President

Still another notice was that in the *Chatfield Democrat* of May 23, 1868:

> First regular annual meeting of the Fillmore County Medical Society will be held at Preston on Monday, the 8th of June next. An address will be given by the President, also an essay, by Dr. Luke Miller, after the regular business of the Society has been attended to. A full attendance by the members of the Society is requested. The community at large is also respectfully invited to attend the evening exercises.

At this point is interpolated a brief review of the organization of the Minnesota State Medical Society and the earliest activities of the society in its bearings on the conduct of county medical societies in general and on the medical societies of Fillmore County in particular. On July 23, 1853, a Minnesota State Medical Society was organized, but for several years previous to 1869 meetings had not been held. In January, 1869, a call was issued to the members of the society and to the profession generally throughout the state for a meeting to consider the expediency of reviving the old society or of organizing a new one. At a meeting held in St. Paul on February 1, 1869, the old society was declared to be defunct and the new state medical society came into being. Although soon afterward the names of various physicians of Fillmore County were on the roster, there is not evidence that a representative of this county was present at the initial meeting.

From the first, the Minnesota State Medical Society concurrently furthered legislation for the protection of the public and the medical profession from abuses of quackery; and it also gave impetus to medical education and the correlated improvement in medical practice and to the organization of component groups in the counties of the state, which should be as "pillars upon which the society will securely rest."

The first resolution adopted by the new state society was "That in case the Legislature now assembled, desire to protect the citizens of the state from quackery, it is the duty of the society to co-operate with the Legislature, and lend its assistance in framing all needful laws upon the subject and that Drs. Willey, Sheardown and Stewart be appointed a Committee as the organ of the Society, for this purpose." The efforts of the society toward legislation had unforeseen results. To quote Miss Clapesattle:

> The legislature of 1869 passed "An Act to protect the people of Minnesota from empiricism and imposition in the practice of medicine." This made it unlawful for anyone to practice medicine in Minnesota unless he had graduated from a two-year medical course or could show a certificate of qualification from some state, district or county medical society. But the sponsors of the Bill had failed to include adequate means for its enforcement, they had not guarded sufficiently against the fake sheepskins of the diploma mills, and they had not considered how easy it would be for the irregular sects to organize medical societies and issue certificates of qualification. (The eclectic physicians, for instance, immediately gathered at Owatonna to organize the Minnesota State Eclectic Society, of which Dr. N. S. Culver of Rochester was made Secretary.) Either because of these defects or because of public opinion that the bill was "class legislation" for the sole benefit of the profession—a charge vigorously denied at the state society's next annual meeting in 1870—the law was considered a failure, and at the next session of the legislature the doctors worked as hard to get it repealed as they had to get it passed. They succeeded and nothing more was done to standardize medical practice by law in Minnesota until 1883.

It is interesting, in view of the legislation of 1869 and its result, that in 1870, at the annual meeting of the state medical society, a committee made up of Drs. C. N. Hewitt, A. E. Senkler, C. Hill and C. H. Boardman reported: "Your committee, after serious deliberation, expresses the belief that laws regulating the practice of medicine, do not and cannot, reach the cause of success of quackery among the people, but that that cause is to be found in the deficient knowledge on the part of the people in regard to the real ground upon which the practice of medicine rests, and that as long as that deficiency exists, quackery will flourish. If legislative action is to be had, it should be directed to the removal of that cause."

The third resolution of the state society, in 1869, and the second that is germane to this discussion, provided that a committee of one from each county be appointed to report the names and number of practicing physicians in his respective county; also the number practicing in the county who were not recognized as physicians by the state society, and their classification. Presently there was made part of the by-laws the provision that the board of censors was to examine all applicants for the diploma of the society. The censors were to constitute a quorum and they were to require of the applicant satisfactory proof that he had studied medicine with some physician and surgeon duly authorized to practice his profession, at least for three years; that he had attended at least one course of lectures in a school of medicine recognized by the American Medical Association; that he had been in reputable practice for a period of not less than five years; and that he was of good moral character. They were then to examine him in the several branches of medicine and surgery and, if such examination were satisfactory, they gave a certificate to that effect to the president or the recording secretary of the Minnesota State Medical Society. And throughout this formative period of 1869 and later, there were reiterated requests from the society to all members of the profession throughout the state, who had not already done so, to organize county societies.

The response of the Fillmore County Medical Society to the Act of 1869 and to other stimulation offered by the state society was prompt and unmistakable, as witness the following three notices in issues of the *Preston Republican* in the spring of 1869:

MEDICAL NOTICE (May 7, 1869): The Fillmore County Medical Society will hold a special meeting in Preston on Wednesday, the 19th inst. for the purpose of transacting such business as the act of the Legislature, approved March 9, 1869, renders necessary. Members of the profession in regular standing are cordially invited to meet with us, as an opportunity will be given for all such to become members.

R. W. Twitchell, President
Fillmore County Medical Society

NOTICE (May 21, 1869): The Fillmore County Medical Society will hold its annual meeting at the office of Dr. Redmon in Preston, Monday, June 7, 1869, at 10 o'clock a.m., to transact such business as may properly come before it. A general attendance of the physicians of the county is earnestly requested as business of importance is to be transacted.

C. H. Robbins, Secretary   R. W. Twitchell, President

Most significant was the notice of June 25, 1869:

ANNUAL MEETING OF THE FILLMORE COUNTY MEDICAL SOCIETY: The society met on June 7, 1869, at the office of Dr. Redmon, in Preston, and was called to order by the President. Dr. Donnelly was elected secretary pro tem.

Dr. Trow, Treasurer, made his annual report which was accepted and adopted.

Dr. Redmon moved to elect delegates to attend the State Medical Society at Owatonna and Drs. Twitchell, Trow, Redmon, Miller and Donnelly were elected.

Dr. Redmon moved that the President appoint a committee of three to revise the fee-bill and report at our next meeting; passed, and Drs. Redmon, Twitchell and Robbins were appointed and the following resolutions were introduced and adopted:

Resolved, that the code of ethics adopted by The American Medical Association shall be our guide in our professional intercourse.

Resolved, that we will not fraternize with, or meet in consultation any one except a graduate of some incorporated Medical College, who sustains a good moral character, provided he is not a student reading with some member of this society, or a physician who has been approbated by the Board of Censors of some regular society of the State of Minnesota.

Resolved, that each member of this society shall inform the President thereof in writing, at what college he graduated, giving the date of his diploma, on or before the 10th day of July, 1869, and should any one neglect to comply with the provision of this resolution, his name shall be stricken from the constitution.

Resolved, that no person hereafter shall become a member of this society until he has informed the President in writing, at what college he graduated, giving the date of his diploma, or be admitted by the vote of the society at some special or monthly meeting.

Resolved, that Dr. Redmon is hereby requested to prepare a list of the regular graduates of this county; also a list of the nongraduates and irregular practitioners, and report the same to the State Medical Society.*

Resolved, that whenever a member of the society moves from the state he thereby loses his right of membership.

Resolved, that we should adjourn to meet on the second Monday of July, 1869, at 1 o'clock p.m.

Resolved, that we will not act as experts in any case in court without receiving beforehand a fee of not less than $5.00.

Whereas, medical societies are organized for the diffusion of knowledge among members, therefore

Resolved, that each member will be expected to read an essay on some medical subject, or report the history of some case as occurred in his practice for discussion, at each meeting of the society.

The following officers were elected for the ensuing year: R. W. Twitchell, President; L. Redmon, Vice President; A. H. Trow, Treasurer; M. Donnelly, Secretary.

NN. Board of Censors: Drs. L. Redmon, L. Miller and A. Plummer.

Dr. Redmon moved that the Secretary forward copies of proceedings to the county newspapers and to the Chicago Medical Journal.

Motion to adjourn carried.

After the action thus recorded had been taken, the Fillmore County Medical Society presumably continued its activities, at least intermittently, until the time, in 1879, when it suspended operations, as stated in the note from the *History of Fillmore County* of 1882, quoted previously. The officers holding over to a better time were, to repeat, Dr. Russell Moore, President (there is record that he was president in 1876 also), Henry C. Grover, Vice President; Lafayette Redmon, Treasurer; Alvah F. Whitman, Secretary.

Subsequent notices, if published, have not come to the attention of the writer, with the exception of the following vital announcement in the *National Republican* (successor, in 1881, to the *Preston Republican*) of October 12, 1882:

THE FILLMORE COUNTY MEDICAL SOCIETY is hereby called to meet at Lanesboro, Thursday, October 19, 1882. Every doctor interested in sustaining a medical organization in our county is cordially invited to be present.

R. L. Moore, President

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*In June, 1869, of the 119 regular practitioners of medicine in the state, eleven were in Fillmore County; and of the ninety-three irregular practitioners, Fillmore County had eight.

(To Be Continued in the July Issue)

President's Letter

MINNESOTA'S MEDICAL CARE PLAN

Minnesota's medical care plan has not been publicized. In fact, it is not generally recognized. Yet, in view of the fact that it is operative, perhaps crystallization of it in some such brief form as a letter like this, may provide it not only clearer definition, but more universal and widespread recognition.

It does embrace the entire population of the state. Hence, the size of the three component population groups, the wealthy, the middle class, and the indigent and marginally indigent, and medical care policies for these groups require discussion.

The Wealthy.—According to statistics presented at the 1938 House of Delegates meeting, the average annual family income in Minnesota in 1933 was $1,750, and only 6 per cent of the population were earning $2,500 or more a year. From these figures, it is apparent that Minnesota is a medium or low average income state. Furthermore, the wealthy persons of the state do not exceed 10 per cent of the population. So far as wealthy persons are concerned, the cost of medical care is not important, nor does it constitute a barrier to the best medical service anywhere available. In fact, from both England and Germany has come word that between 5 and 10 per cent of the population of these countries were sufficiently wealthy to obtain medical care from other sources than health insurance. So, too, in Minnesota, it can be assumed that up to 10 per cent of the population is wealthy enough not to seek low-cost medical care.

Indigent and Marginally Indigent.—This is that portion of the population which cannot provide medical care for itself. Some unit of government, township, municipality, county or state is financially responsible for seeing that members of this group have medical care.

How large is this group in Minnesota? Indigency in Minnesota, in 1937, reached a peak involving 497,500 persons, 20 per cent of the population. Statistics from the Division of Social Welfare in January, 1946, showed 163,000 persons in the state to be indigent or marginally indigent, or 6 per cent of the population. From these figures it appears reasonable to assume that an average of not over 10 per cent of the population falls into this classification.

One might ask, "What is the State's policy of providing medical care for this group?" In the first place, administration is always on a local or county basis, through township, municipality or county agencies. State and Federal participation is on a financially-supplementary, policy-advisory capacity.

In order to keep costs within the ability of taxpayers to pay, physicians and dentists have voluntarily accepted a reduction of one-third of their bills for medical and dental services for indigents. Ophthalmologists, optometrists, oculists and optical houses have been providing services and glasses, respectively, at lower cost for indigents than for pay-patients. Arrangements for drugs on a cost-plus basis for indigents, as already exist in New York, Chicago and other places, were under discussion with the Minnesota State Pharmaceutical Association in the early days of the war. Many of the hospitals of the state provide hospital care to this category of patients at cost, plus a small margin of profit. Briefly, then, for the indigent ten per cent of the population in Minnesota, the medical and allied professions provide medical care at a cost appreciably lower than that for pay-patients.

The Middle Class.—It is seen that 80 per cent of the people of Minnesota are to be classified as in the medium or low income bracket. It is, then, for this large group that Minnesota's Prepaid Medical Care Program is being arranged. As this project becomes operative, adequate medical care, with free choice of physician, at a cost which they can afford will be available to medium or low income families.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE STATE MEDICAL MEETING

The ninety-third annual session of the Minnesota State Medical Association, which was held in Saint Paul in May, is now a matter of history. A total of 1,852 physicians attended, 1,653 of them being Minnesota physicians. In addition, 128 interns, 246 nurses, 363 Auxiliary members and 460 exhibitors registered.

The most important subject which came up for consideration of the House of Delegates was the report of the Committee on Organization for Prepaid Medical Service. This subject of a voluntary prepaid medical insurance company sponsored by the organized medical profession of the state to provide medical care for the people of the state is perhaps the most important one ever to have been considered by any House of Delegates of the Association.

The question has been uppermost in the minds of the committee and those of the membership who have been seriously considering the proposition as to whether the Association should sponsor Plan A or Plan B. Plan A, in brief, would be an organization incorporated by the Association members to provide for medical service to the public authorized by the enabling act passed by the State legislature. In accordance with Plan B, we would sponsor indemnity insurance provided by insurance companies. Opinion seems to have been about equally divided as to the virtues of each plan.

The Committee on Prepaid Medical Insurance favored Plan A on the grounds that this plan is more in keeping with commitments made the public.

Active steps will, therefore, be taken to obtain subscriptions to the amount of $100,000 from the membership, and to ascertain whether the facilities of the Minnesota Hospital Service can be utilized for the sale and collection of premiums on Minnesota Medical Service policies. The recommendation of the Reference Committee of the House of Delegates which considered this report —that in order to accomplish as complete a coverage of the residents of Minnesota in the shortest possible time the commercial insurance companies receive the hearty co-operation of physicians in their offering of indemnity medical isurance—is a good one. Policies providing medical indemnity insurance have been obtainable for some time, and the Saint Paul Mercury Indemnity Company has announced a new policy since our annual meeting. There is room in the field for both commercial insurance companies and Plan A.

When the necessary $100,000 has been subscribed and the proposed plan for the Minnesota Medical Service organization has been set up in detail, a special meeting of the House of Delegates will be called for consideration and final approval.

Another matter that came before the House of Delegates, which is of great importance, is the contract the Minnesota State Medical Association is about to make with the Veterans Bureau, whereby the Association will contract to examine and provide medical and surgical care for veterans suffering from service-connected disabilities. Veterans will be authorized to consult physicians of their choice from among members of the Association registered with the Association for the rendition of such services. The membership will be given an opportunity to register for such service by agreeing to a price schedule of fees which is to be revised before submission. The State Medical Association will collect the sum total of fees from the Veteran Bureau monthly and transmit payments to members.

The success of this undertaking depends entirely on the co-operation and conscientious rendering of service to the veterans by our members. With wholehearted co-operation, the veterans will thus be able to receive prompt and efficient medical care at home.

Officers elected by the delegates to serve for the coming year are:

President, Louis A. Buie, Rochester; First Vice President, Carl B. Drake, Saint Paul; Second Vice President, Lawrence R. Gowan, Duluth; Secretary, Benjamin B. Souster, Saint Paul; Treasurer, William H. Condit, Minneapolis; Speaker, William A. Coventry, Duluth; Vice Speaker, Charles G. Shepard, Hutchinson.

ACADEMY OF PEDIATRICS SURVEY

THE American Academy of Pediatrics has begun a nation-wide survey of the facilities for the medical care of the infants and children of the country. Its purpose is to determine as exactly as possible the supply of doctors, dentists, nurses, hospitals and clinics for the prevention and cure of disease in this group. The survey will be made on a state-wide basis, and the study in Minnesota is to be sponsored by the Northwest Pediatric Society, backed by the Minnesota State Medical Association. In order to obtain this mass of information, doctors, dentists, nurses, hospitals and all agencies associated with health activities will be asked to fill out forms which, we are assured, are to be as simple as possible.

An office has been established in the Division of Child Hygiene of the Minnesota State Board of Health to accommodate the Executive Secretary of the American Academy of Pediatrics survey, who will conduct the tabulation in Minnesota.

The real purpose of the survey is to evaluate the facilities for providing for child health in the state, in order to stimulate local groups to evaluate the resources in their own communities as a background for local planning. It is stressed that there is no thought of obtaining information which might be used by social planners as an excuse for further government invasion of private practice. The Academy is opposed to the use of government funds for the medical care of those able to provide good medical care from their own resources. The Academy has placed itself on record as opposed to the Pepper bill, which provides for comprehensive medical care for the youth of the country up to the age of twenty-one, irrespective of economic status. It has expressed its opposition to numerous additional objectionable provisions of the bill also. It does, however, favor steps to provide good medical and dental care for the infants and children of the country by use of public funds, if need be, and even by federal subsidy of states, if that can be shown to be necessary.

The co-operation of every doctor, dentist and agency to whom a questionnaire is sent will be necessary for the success of this survey. The undertaking has the endorsement of the Council and House of Delegates of the Minnesota State Medical Association. Its prime purpose is the ultimate betterment of the health of the children of state and nation at large.

NEW OPERATIVE PRINCIPLES OF THE CO-OPERATIVE MEDICAL ADVERTISING BUREAU OF THE AMERICAN MEDICAL ASSOCIATION

The Co-operative Medical Advertising Bureau was established by the Board of Trustees of the American Medical Association many years ago to provide advertising of nationally marketed products for state medical journals. Rules adopted provided that only products approved by the various Councils of the American Medical Association, such as the Councils on Pharmacy and Chemistry, on Foods and Nutrition, on Physical Medicine, and on Medical Education and Hospitals, would be accepted by the Bureau and state journals.

In October, 1945, a letter was received from Dr. Olin West, Chairman of the Advisory Committee of the Co-operative Medical Advertising Bureau, which includes, besides Dr. West, the editors of five state journals, stating that because a number of state journals which were members of the Co-operative Medical Advertising Bureau had been violating the rules and had been accepting national advertising not approved by AMA Councils, the Board of Trustees of the AMA was seriously considering terminating the Bureau. This would mean that each state journal would have to go to the expense of procuring its own advertising of nationally marketed products or another co-operative bureau would have to be established.

Therefore, a meeting of editors and business managers of member journals was called to meet in Chicago on December 1, 1945. Your editor represented MINNESOTA MEDICINE at this meeting. After a day's discussion it was decided that every effort should be made to continue the CMAB and to make an effort to provide for some liberalization of the regulations which were felt by some representatives of the journals to be too rigid. On December 2, 1945, the journal representatives met with the trustees who stated their viewpoint and their proposals for the continuation of the CMAB. After considerable discussion it was decided that the Advisory Committee of the CMAB, in co-operation with a committee of the Board of Trustees of the AMA, should draw up a new statement of the Operative Principles of the CMAB to be submitted to representatives of the state medical journals at the Secretaries and Editors Conference to be held in February, 1946. This was done.

The new Operative Principles provide for the administration of the CMAB by the Board of Trustees of the AMA. Its affairs are to be conducted by a director. Incidentally, the former director, Mr. Sandberg, has been replaced by Mr. Alfred J. Jackson. Principles and policies are to be developed by a consulting board consisting of the Advisory Committee of the CMAB, who are editors or business managers of state medical journals, with the General Manager of the AMA, the Chairman of the Advertising Committee of the AMA and the secretary of the Council on Pharmacy and Chemistry of the AMA.

The state journals agree to abide by the standards of advertising of the AMA in all fields covered by the various Councils of the AMA. The New Operative Principles are to be submitted to the official controlling bodies (the Editing and Publishing Committee) of the state journals for approval. After approval by a state journal, that journal shall terminate contracts for advertising of any items not approved by the AMA Councils at the expiration of such contracts, and at the latest by January 1, 1947. No new contracts shall be made for unacceptable products in the future. When there is doubt as to the extent of usage of a product, the question is to be referred to the Advisory Committee of the CMAB. If a state journal fails to correct a violation of the agreement within ninety days after being notified by the director of the CMAB of such violation, this shall be considered evidence of withdrawal of the member periodical from co-operation with the CMAB.

Briefly, Council-accepted or exempted articles are acceptable. Exempted articles are established articles not requiring Council action and so listed. Products of local concerns only which have not been passed on by any AMA Council shall be acceptable advertising provided they are not presented in a false or misleading light in the opinion of the publication committee of the journal concerned.

Minnesota Medicine has made every effort to adhere to the former rules as to the acceptance of advertising and has been prompt to correct the one or two infringements inadvertently made when the error was called to our attention.

It is fortunate that the way has been cleared for the continuation of the CMAB and that the rules have been clarified.—Editor.

PNEUMOCOCCIC AND STAPHYLOCOCCIC MENINGITIS

(Continued from Page 559)

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FRACTURES OF THE SKULL

(Continued from Page 561)

terior, one may obtain an estimate of the over-all picture for soldiers who sustain compound, comminuted fractures of the skull in battle. Of 100 such soldiers whom Campbell studied at an oversea center for treatment of injuries of the head, seventy-two were returned to the zone of the interior. Of our seventy-two patients who had been returned from the combat area, one died of brain abscess. Adding this case to the five of Campbell's cases in which the patients died of infection, one obtains the estimate that, of 100 soldiers who sustain fractures of the skull, six die of infection. Similarly, adding the seven of our patients who returned to duty to the twenty-three similar patients in Campbell's series, one obtains the estimate that thirty of 100 soldiers who sustain fractures of the skull return to duty. Finally, sixty-four of 100 soldiers who sustain fractures of the skull are discharged from the Army after definitive surgical treatment and maximal rehabilitation. On account of the lack of data, these estimates do not take account of soldiers who die on the battlefield because of fractures of the skull.

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ANTILUETIC THERAPY

(Continued from Page 582)

Laboratory Data.—Roentgenogram of chest showed normal lung fields and cardiovascular shadow. Urinalysis, blood chemistry and hematological studies were normal. Blood Wassermann negative. Kahn negative. Kline 2 plus. Spinal Fluid: Slightly increased globulin, cells 1 per cu. mm.; Wassermann negative in .1 c.c.; negative in .5 c.c.; 3 plus in 1 c.c.; Gold curve 1111000000.

Electrocardiogram November 7, 1944 (Fig. 1.) showed left bundle branch block.

Treatment consisted of alternating courses of bismuth subsalicylate in oil and mapharsen. On December 26, 1944 a recheck electrocardiogram (Fig. 2) showed normal conduction.

Comment.—It appears likely that the intraventricular block was due to syphilitic infection as there was no conclusive evidence of coronary arteriosclerosis, rheumatic myocarditis, diphtheria, bacterial endocarditis, tumors or trauma. In addition, after antiluetic therapy, the bundle branch block converted to normal conduction. No digitalis or quinidine was used at any time.

Summary.—A left bundle branch block converted to normal conduction probably as a result of antiluetic therapy.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PROLONGING OF HEARINGS ON HEALTH INSURANCE BILL SEEN

According to information from the AMA Council on Medical Service and Public Relations' Washington office, hearings in the Senate Committee on Education and Labor on the Wagner-Murray-Dingell Health Insurance Bill may extend considerably into June.

The hearings, which began April 2, were recessed from May 8 to 23, with the American Academy of Pediatrics and a number of state medical societies to be heard. Osteopaths, chiropractors and undertakers requested a chance to have their say; and it seems likely that they all will be given opportunity to have it.

Hearing Discussions Are Heated

Hearings began with what amounted to a personal fight between Senator Murray, chairman of the committee, who presided, and Senator Taft. Senator Taft in very heated and in no uncertain terms, insisted that the measure under consideration was socialistic, while Senator Murray, even more heatedly, declared that it was not. Senator Taft, when he was refused opportunity to make a statement by Chairman Murray, left the hearing floor.

Representative Dingell appeared then to make his statment, prefacing it with an attack on the AMA, which he charged with "shooting poison gas to confuse and mislead the American people in order to preserve the monopoly which it exercises over the health of the American people." Senator Smith, at that point, interrupted Mr. Dingell's barrage. He pointed out that attacks on opponents were wrongly motivated and reminded Mr. Dingell that what the committee wants is constructive presentation, rather than Mr. Dingell's personal feelings on the matter. Mr. Dingell, however, having heard the objection, proceeded pretty much as before.

Merits of Pepper Bill Inserted in Discussion

Statements of Senator Wagner, also one of the authors of the Health Insurance Bill, and Senator Pepper, designer of the Maternal and Child Welfare Bill, also before Congress at present, were heard. When Senator Pepper took the floor, he could not resist the temptation to put in a plug for his measure.

He stated that compulsory national health insurance is "rock bottom minimum requirement for an effective national health program," but said he, there are certain *other* aspects of health which such insurance cannot cover. He was, of course, referring to the health and welfare of mothers and children, who, he maintains, will have the answer to all of their problems if his proposal becomes law.

Among other things, he suggested that since he, as one of the sponsors of the Maternal and Child Welfare Bill, was equally strong for the passage of the Wagner-Murray-Dingell Bill, perhaps amendments might be fitted into S-1606 so that if it should pass, it would cover essentially what appears in the Maternal and Child Welfare Bill. If, however, the Wagner-Murray-Dingell Bill should not pass, then 1318, the Maternal and Child Welfare Bill, can be considered as a separate measure, he said.

Security Administrator's Statement Heard

Following Senator Pepper, Mr. Watson B. Miller, Federal Security Administrator, took the floor. Mr. Miller said that he had once been interested in a career in medicine and that he took great pride in American medicine's advance. "Nobody is more zealous than I," he said, "for the high ethics of American medical practice. I would not be a party to attempting to force down the throats of American medicine anything that was not right." He also quoted Abraham Lincoln as saying that his conception of government was "to do for the people only the things they are unable to do for themselves." He concluded that, in view of all this, America "can no longer wait" for compulsory health insurance!

Recent Study Contradicts Mr. Miller

However, a recent study, made by Louis I. Dublin, Ph.D., chief of the actuarial division of the Metropolitan Life Insurance company, in which he probed through voluminous records, would indicate that America definitely *can* wait before launching into political medicine.

Mr. Dublin found that while the cream of the nation's youth was in the armed services and the average age of the civilian population has been considerably higher than normal, the civilian death rate was gratifyingly low.

The year 1945, he reported, brought new lows in the death rates of pneumonia, tuberculosis and appendicitis—maternal and infant mortality were down too!

Cancer was noted to be statistically on the increase. This, however, he explained, was due to (1) the aging of the population and (2) wider recognition of the disease because of educational effort.

Times Reports Dublin's Findings

The *New York Times*, long-known to lean toward Federal compulsory sickness insurance, reported the findings of Dr. Dublin. Later that same week, it stated in an editorial that while the AMA might be able to develop a national plan for prepaid medical service, the U. S. "couldn't wait for experimentation." It further stated that "coverage must be comprehensive and scope national."

The president of the Massachusetts Medical Service, Dr. James M. McCann had something to say on the matter. He told the newspaper bluntly that it was using "a choice political weapon to create confusion." He noted that Dr. Dublin had found the nation's health to be at a high level in 1945, and that certainly, in view of that report and the consensus of other leading health authorities, the nation "is sufficiently healthy to permit a little time to adjust in a democratic manner to changing social and scientific techniques in the fields of medicine and science."

Other Notables Appear at Hearing

Harold L. Ickes, in his capacity as executive chairman of the Independent Citizens Committee of the Arts, Sciences and Professions, appeared at the committee hearing on compulsory health insurance on April 10. He, too, like Mr. Miller, took the attitude that he would be the last one to do an injustice to American medicine. Said Mr. Ickes:

"I would be the last to deny that the country doctor has produced miracles in his time, but I think that the country doctor who has performed these miracles for years without adequate tools of his profession to help him deserves a better fate than to be consigned forever to caring for his patients through the medium of a bag of pills and a stethoscope."

He then cited what he considered "the woeful lack" of medical facilities in this country and joined with the other proponents of compulsory health insurance in hailing the Wagner-Murray-Dingell Bill.

At this point, Senator Donnell, Missouri Republican, began to question Mr. Ickes' statements. Senator Donnell revealed by his questions beyond the shadow of a doubt that Mr. Ickes, himself, was "woefully lacking" in knowledge of current activities in the field of medical care. Senator Donnell, a member of the examining committee, had previously joined the doctors' side in the running debate.

Following Mr. Ickes, Dr. Allen M. Butler, associate professor of pediatrics, Harvard medical school, made his statement. And in turn, two ministers; the executive secretary of the American Association of Social Workers; William Green, AFL president; and representatives of the National Association for the Advancement of Colored People and the National Women's Trade Union League of America, were heard. All favored the Wagner-Murray-Dingell side of the the controversy.

Dr. Sensenich Speaks for Medical Profession

Next witness for the defense of American medicine was Roscoe L. Sensenich, chairman of the board of trustees of the American Medical Association; he was engaged in lively debate by Senator Pepper, who tried unsuccessfully to tear down the argument of the AMA and charge it with obstructionism.

Dr. Sensenich reminded all present that the AMA has a ten-point program for the maintaining of this country's present high level of health care. The AMA, he said, urges a minimum standard of nutrition, housing, clothing and recreation, fundamental to good health. To quote Dr. Sensenich:

"The responsibility for the attainment of this standard should be placed as far as possible on the individual, but the application of community effort, compatible with the maintenance of free enterprise, should be encouraged by governmental aid where needed. That is the background of the position that the American Medical Association has taken with reference to the Hill-Burton Bill and other legislation relating to health matters."

Citing statistics, page and line, to prove his assertion, Dr. Sensenich, with Senator Donnell in agreement, stated that "positive proof exists from experience in other countries that inferior medical service results from compulsory health insurance." Senator Donnell added that, according to statistics published in the Encyclopaedia Britannica Book of the Year, 1943, of the comparative death rates of the larger nations, that the rate in the U. S. was 10.5, and in England, 12.9. He pointed out that England has a compulsory health insurance system.

"The comparative death rates between that of England and the United States, and between that of other countries and the United States," said Senator Donnell, "would tend, Dr. Sensenich, to substantiate you that the health conditions in this country are on the whole certainly favorably compared with those of other nations."

Dr. Sensenich cited a study by Dr. Walter Kennedy, of Newcastle, Indiana, of health conditions in foreign countries, employing compulsory health insurance, which bore out, with indisputable evidence, that the "abominable health conditions" of this country which Wagner-Murray-Dingellites have made their hue and cry for so long, are gross exaggerations.

PHYSICAL MEDICINE SPECIALISTS SEEK NEW ONE-WORD NAME

With the replacement of the old term, physical therapy, with the newer designation, "physical medicine," being accepted throughout the United States, doctors specializing in the field are wondering about what to call themselves. They are seeking a one-word term, which will convey the idea of the use of physical agents in the treatment of human ailments.

There has long been a tendency to refer to technical workers in the field of physical medicine as "physiotherapists" or "physical therapists," but recently the membership in the American Congress of Physical Medicine has been discussing a suitable designation for the physician who specializes in physical medicine.

Three names suggested are "physiatrist," "physiatrician" and physicologist." There has been expressed a preference for the first of these, "physiatrist." While the term may sound strange to the uninitiated ear, the term "physiatrics" is correct from the standpoint of word derivation, since it stems from pure Greek origins— "physis" being the Greek word for physical or natural phenomena, and "iatreia" referring to healing or healer. Therefore, a physiatrist would be a physician who employs physical agents.

Now that fellowships or residencies in physical medicine are being offered at the Universities of Minnesota, Pennsylvania, Harvard, New York, Ohio State and Kansas, as well as many other medical centers, a one-word term should designate physicians who have completed such fellowships.

UNIVERSITY RECEIVES $20,000 GRANT FOR PUBLIC HEALTH WORK

Public health research at the University of Minnesota recently received a grant of $20,000 by the federal security agency in Washington.

This will mean that Dr. Gaylord W. Anderson, director of the school of public health, will be able to complete research and editing of material on global epidemiology, the science of occurrence of disease, begun while serving in the medical intelligence division of the surgeon general's department in Washington.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Minneapolis Man Sentenced to Four-Year Term for Criminal Abortion

Re State of Minnesota vs. Elmer C. Hultgren

On May 17, 1946, Elmer C. Hultgren, thirty-eight years of age, 2900 37th Avenue South, Minneapolis, was sentenced to a term of not to exceed four years in the State Prison at Stillwater by the Hon. Lars O. Rue, Judge of the District Court. Hultgren, on the same date, had entered a plea of guilty to an information charging him with the crime of abortion. Hultgren was arrested on May 6, 1946, by the Minneapolis Police Department following a criminal abortion performed by him on a twenty-five-year-old married Minneapolis woman. The woman became ill and was admitted to Minneapolis General Hospital for treatment. Upon the recommendation of Mr. Brist, attorney for the Minnesota State Board of Medical Examiners, and Mr. Otto Morck, first assistant County Attorney of Hennepin County, Judge Rue ordered Hultgren to serve the first year of his sentence in the Minneapolis Workhouse after which time he will be placed on probation for a period of three years.

Hultgren has a previous conviction for practicing healing without a basic science certificate, having been convicted on September 21, 1944, in the District Court of Hennepin County for violating the State Basic Science Law, and on October 17 of that year, was sentenced to a term of one year in the Minneapolis Workhouse. Due to the fact that Hultgren was employed in an essential job in a Minneapolis war industry, he was required to serve only two months of that sentence. Hultgren was born in Chicago, Illinois, and has lived in Minneapolis for thirty years. He has no medical training of any kind and stated to the Court that a convicted abortionist was the person who first instructed him in the performing of abortions.

PHYSICIANS LICENSED NOVEMBER 9, 1945

October Examination

BERKMAN, David Scott, Med. Col. of Va., M.D. 1944, Mayo Clinic, Rochester, Minn.

BRONSON, Robert Glen, U. of Minn., M.B. 1944, M.D. 1945, Minneapolis General Hospital, Minneapolis 15, Minn.

BUSH, Robert Philips, U. of Pa., M.D. 1944, Mayo Clinic, Rochester, Minn.

CARPENTER, George Tyson, Northwestern U., M.B. 1944; M.D. 1945, Mayo Clinic, Rochester, Minn.

CARPENTER, Richard Everett, U. of Chicago, M.D. 1943, Mayo Clinic, Rochester, Minn.

CHRISTIANSON, Charles S., U. of Oregon, M.D. 1943, Minneapolis General Hospital, Minneapolis 15, Minn.

CONLEY, Francis William, U. of Iowa, M.D. 1943, Mayo Clinic, Rochester, Minn.

DAUT, Richard Victor, U. of Iowa, M.D. 1945, Mayo Clinic, Rochester, Minn.

DUNN, John Hartwell, U. of Tenn., M.D. 1941, Mayo Clinic, Rochester, Minn.

ELLIS, Franklin Henry, Jr., Columbia, M.D. 1944, Mayo Clinic, Rochester, Minn.

GEISER, Peter Micheal, Bowman Gray Med. Col., M.D., 1944, St. Mary's Hospital, Minneapolis, Minn.

HAGEN, Paul Stickney, U. of Minn., M.B. 1940; M.D. 1941, University Hospitals, Minneapolis 14, Minn.

HARE, Helen Jane, Rush Med. Col., M.D. 1942, Mayo Clinic, Rochester, Minn.

HENKEL, Herbert Bowman, St. Louis Univ., M.D. 1944, Mayo Clinic, Rochester, Minn.

HOLT, Robert Perry, U. of Okla., M.D. 1943, Mayo Clinic, Rochester, Minn.

JONES, John Robert, McGill U., M.D. 1943, Mayo Clinic, Rochester, Minn.

KENNEDY, Richard Loren, Rush Med. Col., M.D. 1935, 228 Lowry Medical Arts Bldg., St. Paul 2, Minn.

KRUSEN, Edward Montgomery, Jr., U. of Pa., M.D. 1944, Mayo Clinic, Rochester, Minn.

LEINASSAR, Jorma Michael, U. of Ore., M.D. 1944, Ancker Hospital, St. Paul 1, Minn.

LINDBERG, David Oscar Nathaniel, Boston Univ., M.D. 1915, Buena Vista Sanatorium, Wabasha, Minn.

LOWE, George Henry, Jr., Northwestern, M.B. 1942; M.D. 1943, Mayo Clinic, Rochester, Minn.

MACDONALD, Ian Donald, U. of Ore., M.D. 1944, Mayo Clinic, Rochester, Minn.

MacMUTRIE, Wm. Jos. Aloysius, Jr., U. of Pa., M.D. 1943, Mayo Clinic, Rochester, Minn.

McGUFF, Paul Edward, Ind. Univ., M.D. 1944, Mayo Clinic, Rochester, Minn.

MILLER, Edward Martin, Columbia U., M.D. 1944, Mayo Clinic, Rochester, Minn.

NELIMARK, Donald Robert, U. of Minn., M.B. 1945, Providence Hospital, Detroit 8, Mich.

SPRAY, Paul, Geo. Wash. U., M.D. 1944, Mayo Clinic, Rochester, Minn.

TAYLOR, Ashton B., Northwestern, M.B. 1944; M.D. 1945, Mayo Clinic, Rochester, Minn.

UPSHAW, Bette Young, U. of Texas, M.D. 1942, Mayo Clinic, Rochester, Minn.

WEED, Lyle Alfred, U. of Iowa, M.D. 1939, Mayo Clinic, Rochester, Minn.

WINCHESTER, Elsie Chilman, Rush Med. Col., M.D. 1942, Mayo Clinic, Rochester, Minn.

By Reciprocity

CLAYTON, Paul Algene, U. of Mich., M.D. 1942, Mayo Clinic, Rochester, Minn.

CRAIG, Marion Stark, Jr., U. of Ark., M.D. 1944, Mayo Clinic, Rochester, Minn.

DAVIS, William Irving, U. of Minn., M.B. 1939; M.D. 1940, Mound, Minn.

GILLILAND, Martha Jordan, U. of Louisville, M.D. 1941, Mayo Clinic, Rochester, Minn.

HAZEL, John Tilghman, Georgetown U., M.D. 1928, Mayo Clinic, Rochester, Minn.

LEAVITT, Milo David, Jr., U. of Pa., M.D. 1940, Mayo Clinic, Rochester, Minn.

MARSHALL, Helen Stewart, U. of Wis., M.D. 1942, Duluth Clinic, Duluth 2, Minn.

PARKER, Warren E., U. of Minn., M.B. 1934; M.D. 1935, Wadena, Minn.

POLLARD, William Henry, Jr., U. of Wis., M.D. 1942, 1300 University, Madison, Wis.

PRATT, Fred John, U. of Ark., M.D. 1944, Minneapolis General Hospital, Minneapolis 15, Minn.

SCHMIDT, Edward Carl, U. of Wis., M.D. 1940, Mayo Clinic, Rochester, Minn.

WOODWARD, Robert Samuel, Creighton U., M.D. 1943, Ancker Hospital, St. Paul, Minn.

National Board Credentials

FITZGIBBONS, Robert Joseph, Creighton U., M.D. 1943, Mayo Clinic, Rochester, Minn.

GLYNN, James Joseph, Col. of P. & S., N. Y., M.D. 1943, Mayo Clinic, Rochester, Minn.

HARTIGAN, John Dawson, Creighton U., M.D. 1943, Mayo Clinic, Rochester, Minn.

HENDERSON, Edward Drewry, U. of Minn., M.B. 1943; M.D. 1944, Mayo Clinic, Rochester, Minn.

LE BLANC, Leo James, St. Louis U., M.D. 1941, Mayo Clinic, Rochester, Minn.

Minneapolis Surgical Society

Meeting Held January 7, 1946

in conjunction with the Hennepin County Medical Society

The President, Robert F. McGandy, M.D., in the chair

SECTION OF THE VAGUS NERVES TO THE STOMACH IN THE TREATMENT OF GASTRO-DUODENAL ULCER

LESTER R. DRAGSTEDT, M.D., Ph.D.
Professor of Surgery, The University of Chicago
Chicago, Illinois

I am highly honored to be invited back to Minneapolis and especially, to speak to you once again on the same subject that I had the pleasure of presenting some eight years ago. I feel that I am "carrying coal to Newcastle" to talk about peptic ulcer in Minneapolis, where so many fundamental observations in this field have been made. I have in mind, the splendid work done by Dr. Wangensteen and his associates at the University of Minnesota.

During the past three years, I have sectioned the vagus nerves to the stomach as a method of treatment in fifty-four patients with various types of peptic ulcers. I should like to emphasize the point that the first operation was done just three years ago and the remainder, in the intervening period. This is too short a time to draw final conclusions concerning the value of any therapeutic measure in this disease. This discussion, therefore, must be considered in the nature of a progress report.

Division of the vagus nerves to the stomach has been accomplished above the diaphragm by a transthoracic approach and immediately beneath the diaphragm by an approach through the abdomen. In the transthoracic operation, it has been my practice to make an incision as indicated in Figure 1*a*. The eighth rib on the left side is widely resected (Fig. 1*b*), and the left pleural cavity is entered through the bed of the eighth rib. The inferior pulmonary ligament is divided and the left lung retracted superiorly. The pleura, over the lower 4 inches of the esophagus, is incised, the lower end of the esophagus mobilized by gentle finger dissection and lifted up into the pleural cavity. The diaphragm is held down with a retractor. It is not necessary to section the phrenic nerve. The vagus trunks are easily identified by palpation and dissection as indicated in Figure 2. While there is often considerable variation in the arrangement of the vagus fibers, in most cases they may be identified as two main trunks at the region of the lower esophagus. The left vagus is found somewhat anterior to the esophagus and extends to the lesser curvature of the stomach. The right vagus is posterior to the esophagus and is brought out to the left of the esophagus by finger dissection. There is usually one large communicating branch between the right and left vagus, as indicated in the drawing. Occasionally several additional vagus fibers are found in the wall of the esophagus and these are easily detected by palpation and dissected free from the esophagus with the finger. The vagus nerves are ligated with silk just above the diaphragm and divided. The distal ends are permitted to retract into the abdomen and the proximal ends are brought out into the left pleural cavity and sutured to the pleura (Fig. 3*a* and *b*). The purpose of this maneuver is to hinder regeneration. The esophagus is then gently placed back in its bed and the pleura closed with a running catgut stitch. The chest is usually closed without drainage.

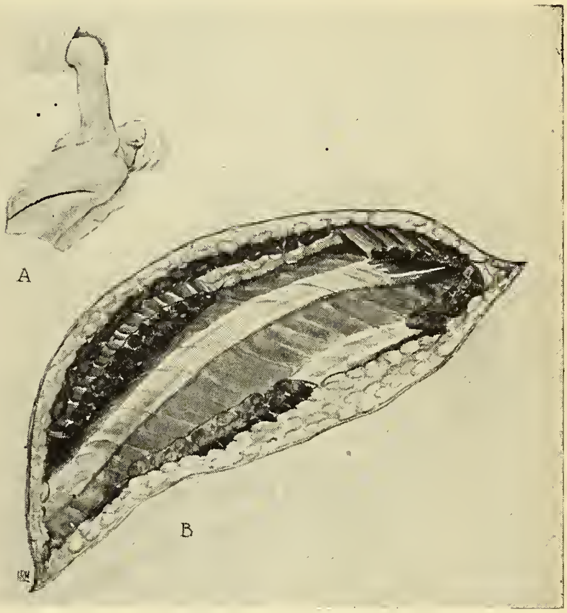


Fig. 1.

In the operation of trans-abdominal vagus section, a left upper paramedian incision has been made as indicated in Figure 4*a*. The ligament to the left lobe of the liver is divided and the left lobe of the liver retracted to the right (Fig. 4*b* and *c*). The peritoneum, covering the lower esophagus is then incised and the esophagus mobilized by blunt finger dissection. It is usually possible to pull the esophagus downward into the abdominal cavity sometimes for a distance of two to three inches. When this is done, it is possible to pick up the right, or posterior vagus nerve as it lies back of the esophagus and the left, or anterior vagus nerve as it extends downward to the lesser curvature of the stomach (Fig. 5*a* and *b*). These nerves are then tied with silk as high as possible, divided and the distal ends brought down and buried in the serosa of the stomach, (Fig. 6*a* and *b*). While it is perhaps more difficult to secure a complete section of the vagus fibers to the stomach by the abdominal approach, this can be accomplished if the esophagus is sufficiently mobilized. As will be indicated later, it is necessary to divide all of the vagus fibers to the stomach to secure a successful result.

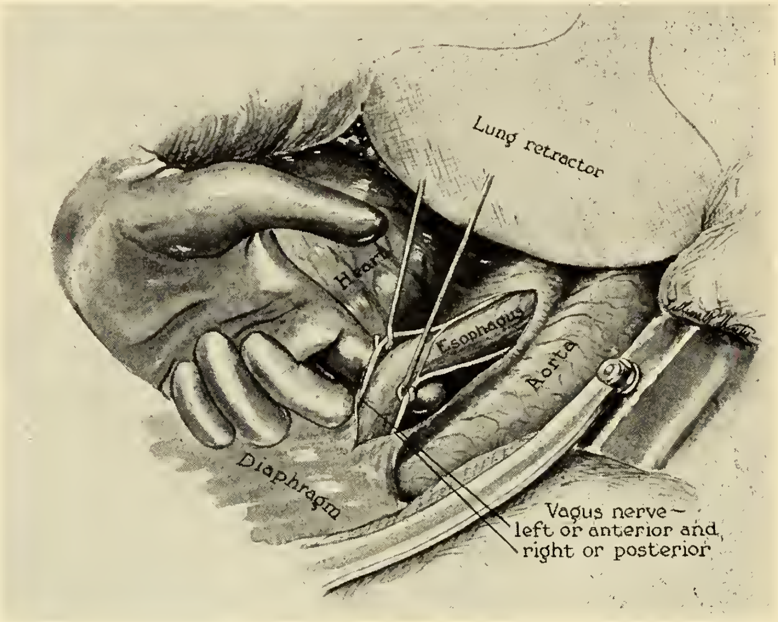


Fig. 2.

What are the theoretical considerations that prompted us to undertake this type of operation as a method of treatment for peptic ulcer? It is not possible in the time at my disposal to present a review of the present status of our knowledge concerning the pathogenesis of peptic ulcer. A part of this data was presented on the occasion of my former lecture. I believe that we know a good deal about the cause of peptic ulcer. The alterations in the physiology of the gastro-intestinal tract which regularly lead to the production of ulcers and maintain their chronicity are well understood. Factors which will permit these experimental ulcers to heal are also recognized. Pure gastric juice as it is secreted by the glands in the fundus of the stomach has the capacity to destroy and digest all living tissue including the wall of the duodenum and of the stomach itself. Many types of experiments have been devised to demonstrate this central fact. Under normal conditions, the gastric wall is not digested away because it is not exposed to pure gastric juice for any considerable period. The stimulus which calls forth the secretion of gastric juice under normal conditions, is the ingestion of food and it is this food which is the chief factor that dilutes and neutralizes the gastric juice and protects the wall of the stomach against its corrosive action. Mann and Williamson demonstrated many years ago that the alkaline juices of the duodenum also exert a protective action against the corrosive effect of the gastric

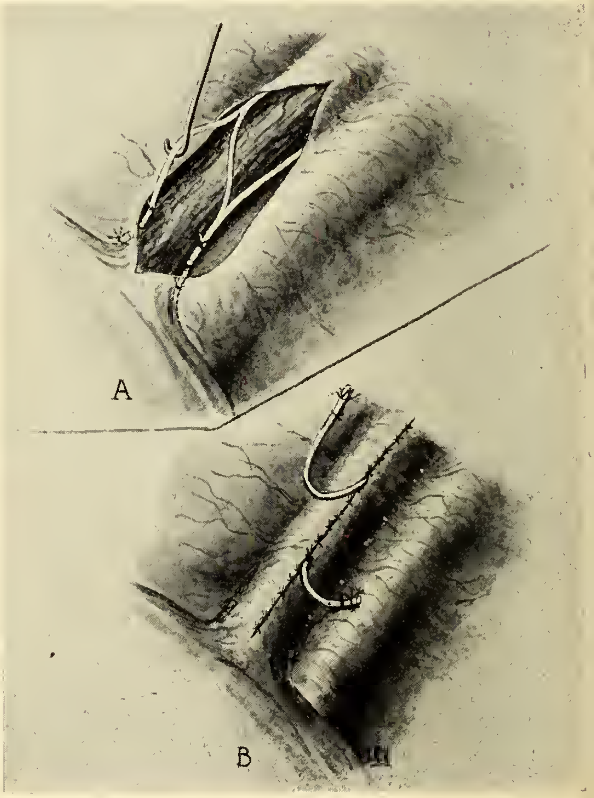


Fig. 3.

juice and this factor is obviously of great importance in reducing the acidity of gastrc juice that is secreted in the empty stomach in the intervals between meals, the so-called continuous secretion. Peptic ulcer, however, occurs for the most part in young and healthy adults in whom there is no evidence that a deficiency in the secretion of bile or pancreatic juice exists or any failure of these secretions to reach the duodenum. If, however, it be conceded that the alkaline juices of the duodenum remain normal in amount and quality, an excessive secretion of gastric juice should produce the same effect as would a withdrawal of the duodenal secretions in the presence of a normal gastric secretion. That an excessive secretion of normal gastric juice in the empty stomach will produce ulcer was clearly demonstrated by Wangensteen, Varco and their associates in this city when this excessive secretion was produced by the implantation of histamine in beeswax in the subcutaneous tissues. As will become evident later on in this lecture, we now have abundant evidence that an excessive secretion of gastric juice occurs in most patients with peptic ulcer, that this secretion is neurogenic in origin and is not dependent upon the stimulus of food.

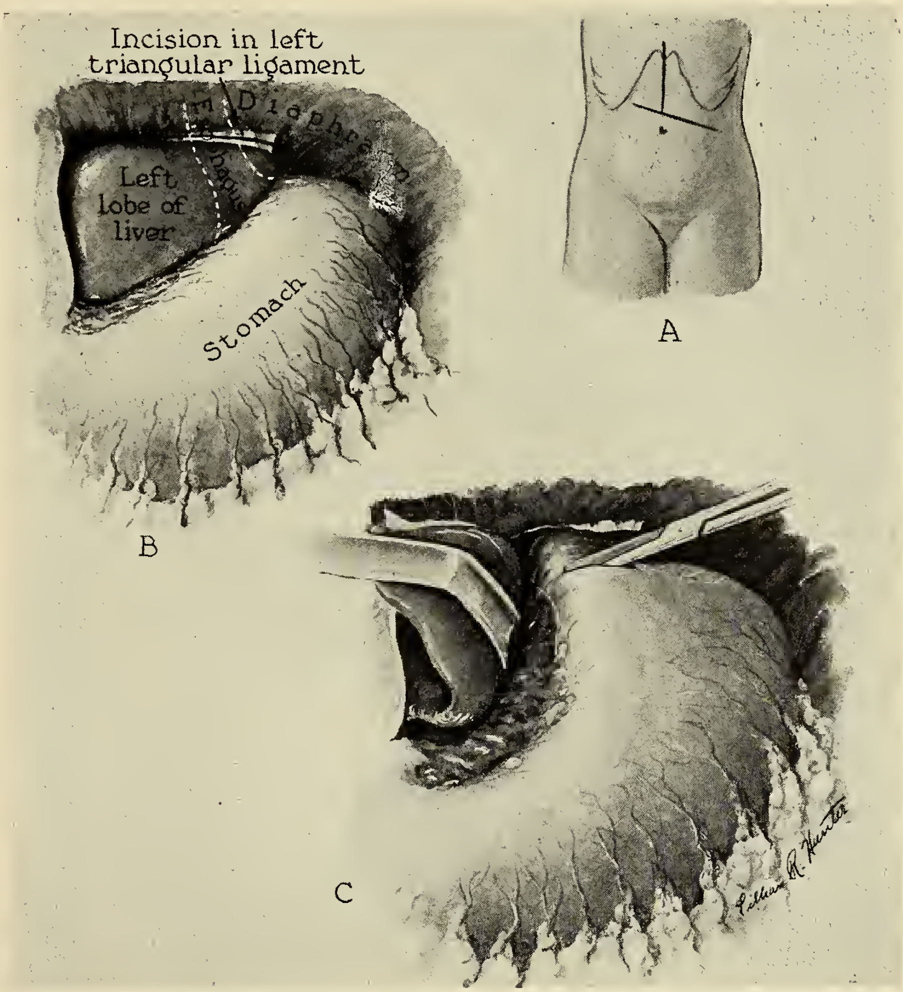


Fig. 4.

In general, the medical treatment of ulcer has been successful depending upon the degree to which the physician has been able to neutralize the acid in the gastric secretion during the entire 24-hour period. In the surgical treatment of ulcer of the stomach, results have been likewise successful, directly depending upon the success of the surgeon in reducing the amount of gastric juice produced by removing an adequate amount of the secreting portion of the stomach.

In the interval between meals, the gastric glands are not quiescent, as Beaumont and Pavlov imagined. The observations of A. J. Carlson proved that a continuous basal secretion of gastric juice is a normal phenomenon in both man and experimental animals. In our observation, this continuous secretion amounts to approximately 300 c.c. during a twelve-hour period when the individual is asleep at night and there is no food in the gastro-intestinal tract. This continuous secretion of gastric juice is markedly augmented by the ingestion of food. The taste of food, and to a certain extent also the sight and odor of food, provokes a secretion of gastric juice that is neurogenic in origin. It is dependent upon a conditioned reflex which excites the gastric secretory fibers in the vagus nerves to the stomach. This information has come to us from the classical experiments of Pavlov and his pupils. Division of the vagus nerves to the stomach, which removes this neurogenic phase of gastric secretion does not stop the secretion of gastric juice in the stomach as Pavlov supposed. On the contrary, a secretion of gastric juice occurs so long as food is present in the stomach or in the upper intestine. This secretion is due to the liberation of gastrin from the wall of the stomach and duodenum. It is produced by the presence of food and its formation ceases when the stomach and intestines become empty. We have, at the present time, no very accurate data with respect to the normal amount of gastric juice that is secreted by man in a twenty-four hour period. There seems to be no way to subject the stomach to the normal stimulus of food and collect the secretory product. There is, likewise, no precise information concerning the proportion of gastric secretion that is due to neurogenic stimulation and the amount that is brought about by the gastrin or hormone mechanism. Knowledge concerning the chemical stimulation of the gastric glands has come about largely as a result of the work of American physiologists. It is possibly due to this fact that our attention has been so largely focused on this chemical mechanism and consequently, chemical types of stimuli such as histamine or alcohol have been used almost exclusively to test the secretory function of the stomach in health and disease.

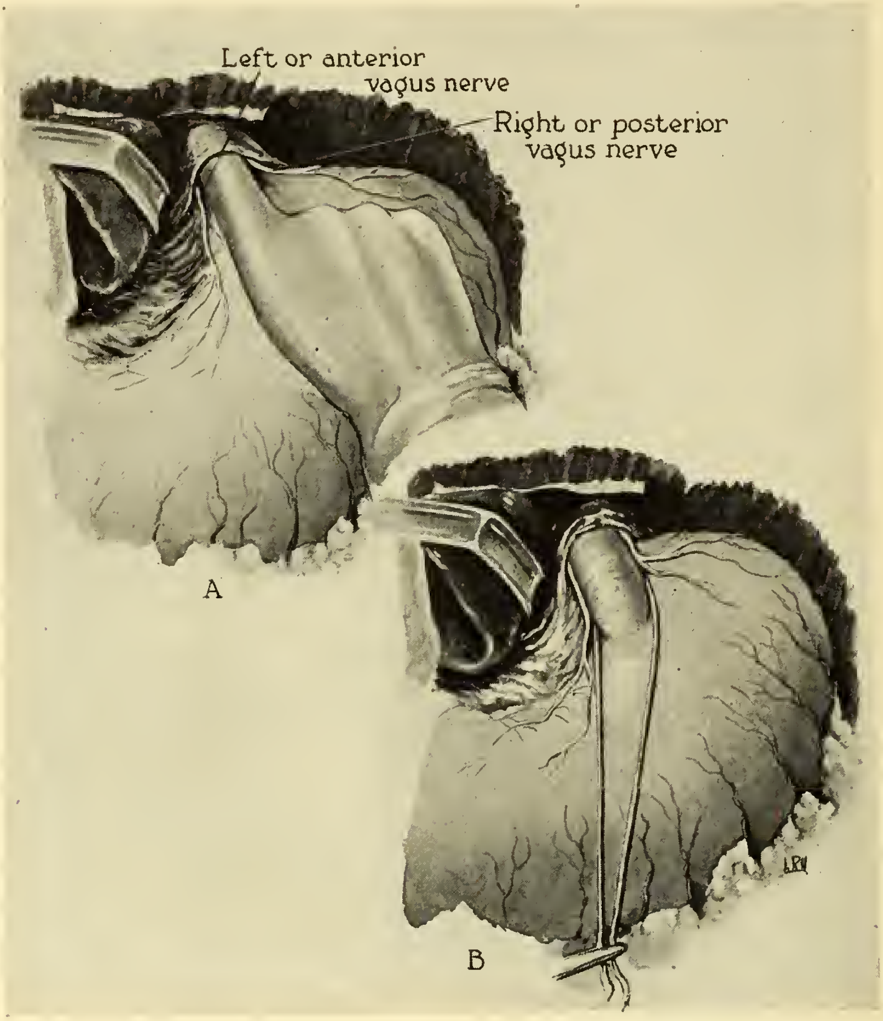


Fig. 5.

In an attempt to secure information concerning the relative importance of vagus nerves in the secretion of gastric juice, we performed an experiment of the type illustrated in Figure 7. The stomach was transected at the cardia and at the pylorus and the ends infolded and closed. The lower end of the esophagus was anastomosed to the duodenum or implanted into the jejunum. Care was taken not to interfere with the vagus nerve supply to the stomach or with its blood vessels. After recovery from such an operation, food passes directly from the esophagus into the intestine and no food enters the stomach. Nevertheless, the isolated stomach in such an experiment will secrete from 1,000 to 2,500 c.c. of highly acid gastric juice in a twenty-four-hour period which may be collected by a suitable cannula. The loss of this amount of gastric juice produces a rapidly fatal hypochloremia, alkalosis and dehydration. This must be compensated for by the daily intravenous ingestion of adequate amounts of physiological salt solution. If the vagus nerves to such an isolated stomach are divided, the secretion of gastric juice falls off to an average of 300 to 600 c.c. per twenty-four hours and with this decreased gastric secretion, the parenteral administration of salt solution may not be required. It is thus evident, that in the normal dog, the vagus nerves are the most important factor in determining the volume and acidity of the gastric secretion. These were among the theoretical considerations which led us to attempt total section of the vagus nerves to the stomach as a method of treatment for peptic ulcer.

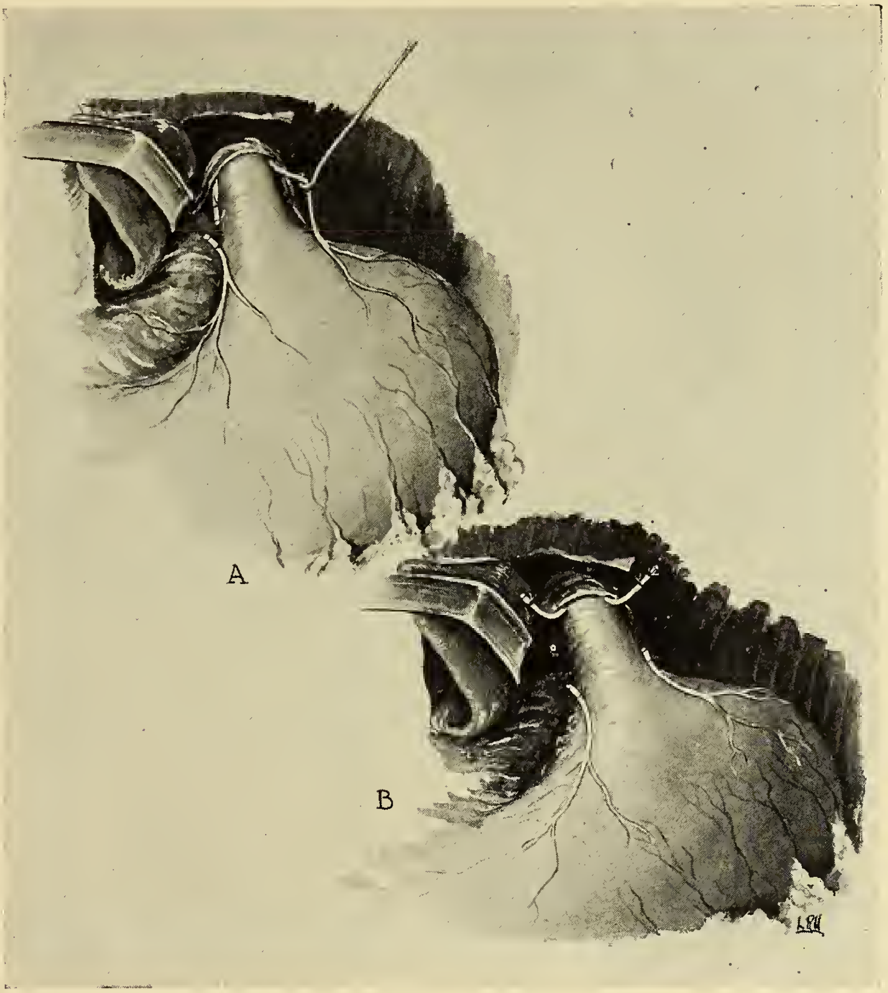


Fig. 6.

What have been the results of this operative procedure to date? The total number of patients operated upon is fifty-four. Of these fifty-four patients, one died from aspiration pneumonia, making a mortality of about 2 per cent. In thirty-nine patients, the vagus nerves were divided above the diaphragm by a transthoracic operation; in the remaining fifteen, section of the vagus nerves was made beneath the diaphragm through a transabdominal incision. Two patients had large chronic gastric ulcers and had been observed in our Gastro-intestinal Clinic for four and five years, respectively. Although x-ray and gastroscopic examination indicated that these ulcers were benign, resection of the stomach was advised but refused. Following supra-diaphragmatic section of the vagus nerves, both of these ulcers healed as determined by x-ray and studies. Eight of the patients had gastro-jejunal ulcers and of these, two followed gastro-jejunostomy, and six followed subtotal gastrectomy. Forty-four patients had duodenal ulcers, many associated with high grade cicatricial stenosis of the pylorus, repeated severe hemorrhages, or were in general, intractable to medical management. In all patients, gastric decompression with an indwelling tube was carried out for the first four days following vagus section. This is a matter of the greatest importance since a profound depression in the tonus and the motility of the stomach occurs immediately following the operation which in the presence of pyloric stenosis may result in an acute dilatation of the stomach. All of the patients were mobilized the day following operation. As a rule, no dietary restrictions were prescribed when feeding was instituted on the fifth or sixth day, and all medication was discontinued. Except for one woman with a duodenal ulcer in whom subsequent testing indicated that a complete vagotomy was not secured, the result has been immediate, complete and permanent symptomatic relief, gain in weight, and in most cases objective evidence of healing of the ulcers. There have been no recurrences to date, no hemorrhages and no perforations. Fifteen of the patients required gastro-enterostomy at the time of the vagus section or subsequently because of cicatricial pyloric stenosis. One patient with a jejunal ulcer following gastric resection, continued to display obstructive symptoms and a subtotal resection subsequently was done elsewhere. In this case, I have been informed by Dr. Warren Cole who performed the operation that the residual symptoms were due to obstruction and not to persistence of an ulcer which had healed.

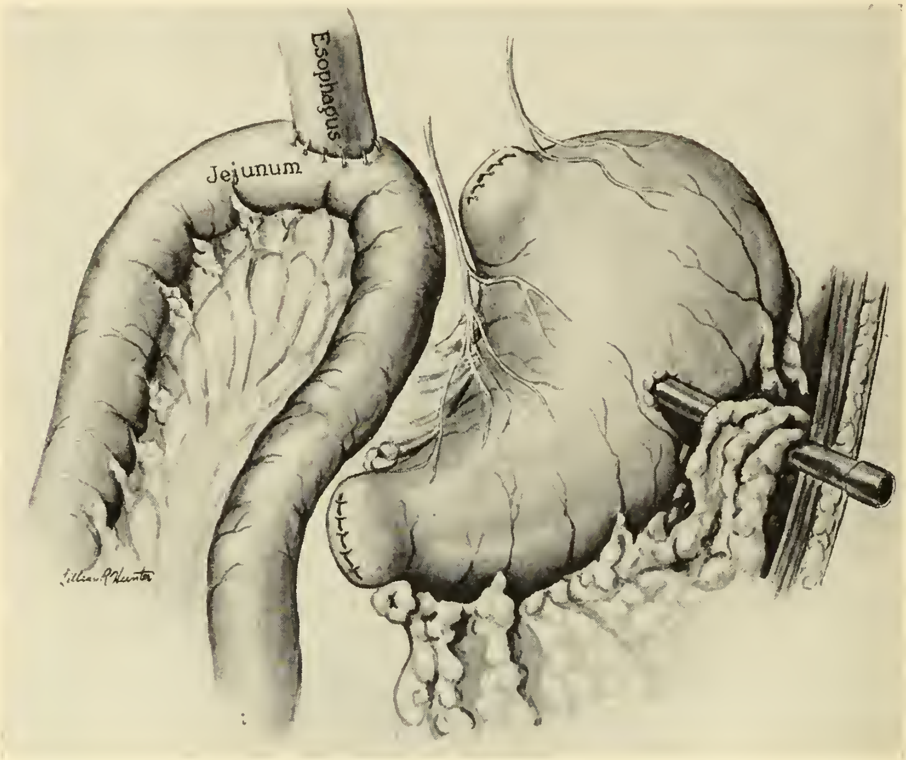


Fig. 7.

During the course of this study, some observations have been made on the secretory and motor function of the human stomach, before and after total vagus section, that are of considerable interest. For the most part, it has been customary to determine the gastric secretory response of ulcer patients to some type of humoral stimulus and compare this response with that obtained from normal individuals. The stimuli usually employed have been histamine or alcohol. In general, it may be said that ulcer patients secrete a little more gastric juice in response to these types of stimuli than do normal people. The difference, however, has not been sufficiently uniform and great to have much diagnostic significance and as a result, many gastro-enterologists have abandoned this type of examination. A determination of the secretion of the empty stomach in the absence of any known stimulus gives promise of being more useful both from the standpoint of diagnosis and prognosis. The early view of Beaumont and Pavlov, that in the intervals between meals the gastric glands are quiescent, has been shown to be incorrect by the extensive studies of A. J. Carlson. He has found that a continuous basal secretion of gastric juice is a normal phenomenon in both animals and man. The cause of this continuous secretion in normal individuals is unknown. It can best be determined by washing out the stomach at 9 o'clock in the evening and then maintaining constant suction by means of an indwelling tube connected with a Wangensteen apparatus. Aspiration is continued for twelve hours, until 9 o'clock the following morning. In nine patients with carcinoma of the stomach, in whom this examination was made, the continuous twelve-hour night secretion averaged 260 c.c. with a free acidity of four clinical units. In five patients with carcinoma of the colon, an average night secretion of 238 c.c. was obtained with a free acidity of nine clinical units. In six patients with cholelithiasis, an average of 385 c.c. of continuous secretion was secured with a free acidity of six clinical units. In sharp contrast to these findings, in ten patients with duodenal ulcer, an average night secretion of 821 c.c. was found with a free acidity of forty-seven clinical units. In other words, patients with duodenal ulcer were found to secrete from two to three times as much gastric juice as do normal individuals when there is no known stimulus applied to the gastric glands. In our experience, this has been a uniform finding, not only with respect to patients with duodenal ulcers, but also in patients with gastric ulcers. The chief secretory abnormality in ulcer patients is therefore, not that they secrete more gastric juice in response to the stimulus of histamine or alcohol but rather that they secrete large volumes of highly acid gastric juice in the empty stomach in the absence of extraneous stimulation. It is very significant that this abnormally large continuous secretion decreased to the levels found in normal individuals after complete section of the vagus nerves. This finding proves that the excessive secretion of gastric juice in ulcer patients is neurogenic in origin.

These findings are in harmony with the concept that duodenal ulcer is a psychosomatic disease. It is now well established that the incidence of ulcer is especially high in those individuals whose occupations subject them to great stress and strain and that exacerbations in ulcer patients are particularly apt to occur during periods of emotional stress. Several years ago, Harvey Cushing summarized the evidence implicating the central nervous system in the genesis of ulcer. He suggested that peptic ulcer depends upon some disturbance or disease in the midbrain. Of the possible ways in which the central nervous system could affect the gastro-intestinal tract the most likely avenues would appear to be by way of the extrinsic nerves, the vagi and the splanchnics. The evidence that we have secured indicating that an excessive secretion of gastric juice of nervous origin occurs in most, if not in all, ulcer patients, coupled with the demonstration in the experimental laboratory, notably by Dr. Wangensteen and his associates, that an excessive secretion of gastric juice experimentally induced will regularly produce ulcers in the stomach and duodenum makes it seem most probable that the midbrain plays its rôle in ulcer genesis through excessive secretory nerve impulses conveyed to the stomach over the vagus nerves. Such an explanation is more in harmony with the data obtained from experimental studies on the patient genesis of ulcer than the concept that the central nervous system produces ulcer in the stomach by producing local areas of vaso-constriction or of trophic disturbance.

I should now like to call your attention to a method of stimulating gastric secretion that is of great significance in connection with the operation of vagus section for the treatment of ulcer patients. It is very evident that all of the vagus fibers to the stomach must be divided, that the vagotomy must be complete or a beneficial result cannot be expected. Do we have any method for determining if all of the secretory fibers of the vagus nerves to the stomach have been excluded? The administration of 20 to 30 units of insulin in the fasting state produces a marked hypoglycemia. This hypoglycemia in turn, stimulates the vagus centers and causes a secretion of gastric juice in the stomach. This secretion is entirely abolished if the vagus section has been complete. In making this test, it has been our custom to fast the patient for twelve hours and then give a subcutaneous or intravenous injection of 20 units of regular insulin. A preliminary determination of the blood sugar is made. The gastric content is aspirated at ten-minute intervals and its volume and free acidity determined. Forty-five minutes after the injection of insulin a second determination of blood sugar is made to determine the extent of the hypoglycemia. If the blood sugar does not fall to 30 mg. per cent, a maximum stimulation of the gastric glands will not be secured. If the vagus nerves are intact, an increase in gastric secretion is regularly found forty to fifty minutes after the subcutaneous injection of the insulin. If the vagus section has been satisfactory, no increase in secretion in response to the hypoglycemia will be found.

The motility of the empty stomach in our ulcer patients has been studied by the balloon technique and the contractions recorded by means of a manometer and Kymograph. As a result of these studies we have confirmed the observations of previous investigators that the motility and tonus of the fasting stomach in ulcer patients is greater than in normal individuals. Following section of the vagus nerves, there occurs a profound inhibition in the tonus and motility of the stomach which is most marked for the first two or three days after the operation and which gradually returns toward the levels found in normal individuals. It is important to emphasize that neither the tonus nor the contractions of the empty stomach are abolished by sectioning the vagus nerves. The profound decrease in gastric tonus, however, in the immediate postoperative period makes it highly important to decompress the stomach by means of the Wangensteen suction apparatus. If this is not done, an acute dilatation of the stomach may result. It has been my experience that after three or four days of such decompression the motility of the stomach has recovered sufficiently to permit normal emptying if cicatricial obstruction is not present.

In concluding these remarks, I should like to emphasize that our first patient was operated upon just three years ago and the remainder in the intervening period. This is obviously too short a time to permit us to draw final conclusions with respect to the value of vagus section as a therapeutic measure. The results to date, however, have been so satisfactory that I feel justified in making the following provisional conclusions: Transthoracic supra-diaphragmatic section of the vagus nerves is recommended as a substitute for subtotal gastrectomy for duodenal ulcers in the absence of cicatricial stenosis of the pylorus; gastrojejunal ulcers and for gastric ulcers where the diagnosis is certain. Trans-abdominal vagus section plus gastro-enterostomy is recommended for duodenal ulcers with cicatricial pyloric stenosis. So far, we have not encountered recurrent or stomal ulcers in patients who have had a vagus section and a gastrojejunostomy. I do not believe that such ulcers are apt to occur since section of the vagus nerves in patients with established gastrojejunal ulcers has caused these ulcers to heal. If a jejunal ulcer will disappear as a result of the vagus section it seems to me that we are justified in believing that in all probability a new jejunal ulcer will not develop. A longer period of observation and a more extensive series of patients are obviously necessary to provide final answers to many of these questions.

Discussion

Dr. Maurice Visscher.—It is a privilege to be able to make some remarks in connection with the excellent paper that Doctor Dragstedt has just presented. I would suggest first that one of the statements which our chairman has made in introducing Doctor Dragstedt is perhaps incorrect; namely, that Doctor Dragstedt deserted physiology to go into surgery. I would say rather that he utilizes surgery to further physiology.

The first thing I would like to say is that the observations that Doctor Dragstedt has made in this series of clinical studies on fifty-four patients on whom he has performed vagotomy at the level of the lower esophagus have provided us with a great deal of very useful physiological information, particularly in connection with the influence of the vagus on the motility of the stomach in humans, information which we simply could not have gotten in any other way.

In that connection I might remark that every one who has thought about Doctor Dragstedt's interesting surgical experiments has wondered whether or not the motility changes might be so great as to make the operation impractical. He has shown us that there is in the gastric ulcer patient ordinarily an increased gastric motility, and I wonder whether perhaps the fact that he worked with patients in which there is already an imbalance between the factors controlling motility, in favor of increased motility, may not be the reason why he has been able to remove the vagal factor without producing an atonic condition which persists over a long period of time and does damage. Perhaps there is something in the way of a fundamental disability which is corrected by removal of the vagal factor which would not indicate that in the normal subject one could perform the vagotomy with the same impunity. I would like Doctor Dragstedt's comment upon that.

The very beautiful observations on the rôle that the vagus nerve fibers play in controlling the interval secretion has also added an important new set of facts to physiology. It is rather surprising that one would find the interval secretion in the absence of the vagus fibers to have as much lowering of acid as Doctor Dragstedt has found. A few years ago Doctor Varco and Doctor Lifson and I were interested in the problem of gastric acidity in relation to what we might call the neutralizing factor. We ran onto some rather interesting observations in study of osmotic pressure of the gastric juice. It is ordinarily supposed that the gastric secretion is isotonic with the plasma. This is a matter of fact, slightly incorrect, as most acid gastric juices are a little hypertonic. Further, in those animals in which the gastric juice after histamine possessed low acidity, it was found to be quite definitely hypotonic. This we interpreted as being due to neutralization of two components, alkali and acid with loss of some osmotically active particles. Sodium chloride and hydrochloric acid upon neutralization end up with fewer particles and lower osmotic activity. There are some animals in which that mechanism does not exist. So far as we know, this problem has not been studied from the clinical point of view at all. It might be worth while to study the osmotic activity of gastric juice in relation to peptic ulcer and the presence and absence of an internal neutralizing mechanism in the gastric juice.

I would like to point out one further implication of the general physiological aspects of Doctor Dragstedt's studies. He has attacked one of the mechanisms by which the amount and acidity of gastric juice can be influenced. There are other physologic mechanisms by which the gastric secretion in quantity and quality could be influenced. I point out that the road is still open for physiological studies such as those for example that Doctor Dragstedt's former collegue Doctor Ivy is carrying on in connection with the action of chemical agents such as enterogastrone, whose use involves much less drastic procedures than gastrectomy or even vagotomy. Obviously we would prefer some chemical means of bringing about a result in preference to a surgical procedure.

Dr. Moses Barron.—We are to be congratulated on having had the opportunity of listening to a paper which combines the results of the knowledge and technique of a great surgeon and the keen thinking ability of a physiologist. The presentation here this evening shows what can be done when one has the basic fundamental knowledge of how to approach problems, and in this case, a very important problem, as we all know. All of us who are in practice know how common a condition ulcer is and the recent literature shows that during the last war in the British Army, gastro-intestinal upsets were very common, known as dyspepsias, and of these, about 55 per cent were shown to be ulcers. Similarly, in the German Army, about 33 per cent of so-called dyspepsias were ulcers, and in the American Army, though much less, 10 to 15 per cent of those complaining of gastro-intestinal distress proved to have peptic ulcers. These conditions were serious problems in the armed forces.

You can see, therefore, that the problem which Doctor Dragstedt is trying to solve is a very important one. As an internist, of course, I feel that the problem is still far from solution, and it is my opinion that the treatment of peptic ulcers is a medical and not a surgical problem. Doctor Wangensteen here knows well my stand on this. It is my opinion that only when there are complications to the peptic ulcers, such as recurrent hemorrhages, obstruction or perforation, is surgery to be considered. Even in obstruction the treatment is often medical unless it is due to scars and cicatrices. Very often it is due to spasm which responds to medical management. Perforation, of course, is always surgical. Repeated hemorrhages, especially in older people where the vessels are often sclerotic, call for surgical interference.

It has now been well established that the acid-pepsin factor is the most important one in the continuation of ulcers. This idea is well illustrated by the fact that practically no one has seen a chronic ulcer develop in a case of pernicious anemia because there is achlorhydria present. One day while making rounds at the General Hospital, I was told that there was a patient in the ward with pernicious anemia in whom gastroscopy showed the presence of an ulcer. However, that ulcer was asymptomatic and required no treatment. Superficial ulcers in the stomach are probably frequent, but they heal and do not become chronic if acid and pepsin are not present in excess.

The problem in ulcer management is how to get rid of or greatly reduce the acid secretion. In the literature it is often stated by some authorities that from 30 to 40 or even 50 per cent of medically managed ulcers have recurrences. This may be true, but it is not necessary. You cannot treat an ulcer like you do pneumonia. Doctor Dragstedt has pointed out that there is a strong psychosomatic factor in ulcer patients. For this reason it is essential to treat this factor and to go into great detail in explaining to the patient just what one tries to do by the management. If that is done and if a proper regimen is established, by far the great majority of the patients will become entirely free from symptoms within a very short time and will remain symptomatically cured without recurrence. In my experience this method has proved very satisfactory.

In those cases where surgical procedures are indicated, we want, of course, the simplest ones to be used, and Doctor Dragstedt apparently has reported on a relatively simple procedure. In his series, his mortality rate was 2 per cent and postoperative convalescence was not prolonged. The question is, of course, what is the final outcome? If my memory is correct, Doctor Dragstedt stated that 7 cases had to be followed with gastro-enterostomy in his series of fifty-four cases after the vagotomy. This makes about 15 per cent of recurrence of symptoms. That is rather high. A number of different procedures have been devised for surgical management. I have been told by some surgeons that gastro-enterostomy is not satisfactory because of the subsequent development of jejunal ulcer in quite a percentage of cases. It is possible that Doctor Dragstedt's vagotomy may reduce the secretion enough to prevent this complication. Of the gastric resections, some have not been satisfactory. Recurrences of ulcers have been reported. From the physiological point of view, it would therefore, seem that to get the best results, a subtotal resection should be done since this would remove most of the acid-forming tissue. Doctor Dragstedt stated that even after vagotomy, secretory stimulating substances like caffein would stimulate secretion about as much as before the vagus section. We know also that certain foods cause strong stimulation of the secretion by acting directly upon the secreting cells. Vagotomy, therefore, will remove only part of the factors which produce excessive acid.

As the essayist himself has stated, we do not know what will happen in four or five years following the operation. No definite conclusions, therefore, can as yet be drawn. He showed in his slides that there is a large quantity of secretion in the stomach in cases of duodenal ulcer, and yet two weeks after his operation, the quantity of secretion is much less and the acidity is less. I am wondering whether the same result would not be obtained if any operation had been performed on the patient, such as appendectomy. Has he checked the results of the acid secretion following other types of operations? It is possible that the mere act of operation and keeping the patient confined to bed may cause a reduction in the quantity and acidity of the secretion. Doctor Dragstedt probably will enlighten us later on this phase of the problem, but we are very grateful to him for taking such an interest in one of our great problems, that of peptic ulcer, and I personally would like to thank him for this evening's presentation.

Dr. Owen Wangensteen.—This has been a typical Lester Dragstedt performance of a high order of excellence, and I count it a real pleasure to have had the opportunity of hearing Doctor Dragstedt's fine presentation. When one takes the pains to enumerate the known agencies through which gastric secretion may be inhibited, vagotomy stands high on such a list. Long ago, Pavlov demonstrated that bilateral vagotomy did away with the cephalic phase of gastric secretion for good and all. Doctor Dragstedt suggests, moreover, that the interdigestive basal gastric secretion, in patients with duodenal ulcer at least, may be "neurogenic" in origin. A number of published reports indicate that the "night secretion" of patients with duodenal ulcers may be reduced considerably with atropine. That is, a drug such as atropine, which inhibits the transmission of vagus mediated influences, will reduce the volume as well as the acidity of the gastric juice appreciably in the interdigestive phase. My associate, Doctor Fred Mears (Surgery 13:214-23, 1943) studied this item in our clinic and found that the influence of atropine in decreasing gastric secretion in ulcer patients was real. However, one consideration deterred us from taking the bold step which Doctor Dragstedt has described. Hartzell (1929) took up the study of the effect of vagotomy upon gastric secretion for his Master's thesis under Doctor Frank Mann's direction. You will recall that Hartzell sectioned the vagi nerves below the diaphragm in some dogs and above it in others. The period of study after vagotomy in Hartzell's dogs was five months. He noted a reduction in gastric secretion, particularly in the dogs in which the vagi nerves had been cut above the diaphragm. However, Vanzant (1932) restudied the remote results of vagotomy in four of Hartzell's eight dogs more than two years after the vagotomies had been done. At that time, Vanzant noted that the depressing effect of vagotomy had been lost. She failed to find any evidence of regeneration of the vagi nerves at autopsy. Vanzant stated that Pieri and Tanferna observed that the depressing effects of vagotomy upon gastric secretion in man were not permanent. On the basis of reports such as Vanzant's (1932), it might be well to reserve judgment with reference to the late results of vagotomy upon gastric secretion until a few more years have elapsed.

Another deterrent to ready acceptance of vagotomy as a satisfactory operation for ulcer has been the occurrence of pyloric obstruction. Possibly this is a more frequent sequel of vagotomy in the dog than in man. My associate, Doctor Carroll Bellis (1939, unpublished observations) noted dilatation of the stomach accompanied by an increase in thickness of the gastric wall after vagotomy in dogs. Vomiting was not infrequent. Scharpy-Schaefer already had made a similar observation approximately twenty years before. Doctor Dragstedt's associate, Doctor Phemister, also has reported some delay in gastric emptying in esophago-gastric resections for esophageal cancer, owing to incidental bilateral vagotomy. It is reassuring to learn that vagotomy apparently does not reduce appetite for food.

Doctor Dragstedt has indicated that a complemental or supplemental gastrojejunostomy has been found necessary in about 15 per cent of patients undergoing vagotomy for ulcer. Montgomery (1923) has shown that gastrojejunostomy in the dog is followed by ulcer in about 6 per cent of instances. Normally the dog, unlike man, is quite immune to spontaneously occurring ulcer—a circumstance attested to by both Mann and Ivy. Doctor Dragstedt himself, I believe, is responsible for the suggestion that gastrojejunostomy for duodenal ulcer in man is followed by gastrojejunal ulcer in approximately 40 per cent of the patients. It is important to know, therefore, whether the depressant effects of vagotomy upon gastric secretion are lasting.

Beaver and Mann (1931) failed to observe that vagotomy protected against the Mann-Williamson provoked ulcer. In only one of nine dogs after diversion of the bile and pancreatic juice to a lower level, did vagotomy obviate the occurrence of stomal ulcer. Moreover, my associates, Doctors Ivan Baronofsky and Stanley Friesen (1945, unpublished observations) failed to note any protection against the histamine-provoked ulcer after vagotomy in the dog and rabbit.

It has been profitable and stimulating to have Doctor Dragstedt here, and those of us who have a special concern in the subject will follow his observations with the keenest interest.

Dr. Lester R. Dragstedt: I should like, first of all, to express my sincere thanks and appreciation for this friendly and informative discussion. I am quite sure that in this operation, we do not have the final answer to the ulcer problem. If peptic ulcer is a psychosomatic disease and arises as a result of the tension and strain of modern competitive life then I quite agree that there ought to be some more fundamental way of treating the essential disorder. As you know, there have been occasional attempts to treat peptic ulcer with various types of psychotherapy. I should like to point out to those physicians interested in this field that we have now objective evidence of the nervous disorder at the basis of

(Continued on Page 618)

Minnesota Academy of Medicine

Meetings of February 13 and March 13, 1946

February 13, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 13, 1946. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the President, Dr. S. E. Sweitzer.

There were forty-five members and one guest present.

Minutes of the January meeting were read and approved.

Dr. J. A. Lepak, chairman of the Committee on Revision of the Constitution, stated that the committee has been working very hard to revise the constitution and bring it up to date and also the Articles of Incorporation of the Academy. It is necessary to revise the Constitution in order to conform to the statutes of the State of Minnesota. When this work is completed the Articles of Incorporation will be presented to the members for discussion and disposal.

The scientific program followed.

Dr. L. H. Fowler, Minneapolis, as his Inaugural Thesis, gave a lantern slide talk in color on "Surgical Experiences in England, Africa and Italy" with Base Hospital No. 26.

The meeting adjourned.

A. E. Cardle, *Secretary*

March 13, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 13, 1946. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the President, Dr. S. E. Sweitzer.

There were fifty-three members and three guests present.

Minutes of the February meeting were read and approved.

Dr. Lepak, chairman of the Committee on Revision of the Constitution and incorporation of the Academy, then reported for his committee, and the changes made in the present constitution and by-laws, principally with regard to the election of new members. A motion was made and seconded that these changes be adopted, and upon vote the motion was carried. Dr. Lepak also showed the picture of the new Seal of the Academy.

A motion was carried that Dr. Lepak and his committee be given the thanks of the Academy for his arduous work in connection with the incorporation of the Academy and the revision of the Constitution.

The scientific program followed.

MULTIPLE MYELOMA

Report of a Case

JOHN A. LEPAK, M.D.
Saint Paul, Minnesota

Ewing defines multiple myeloma as a specific malignant tumor of the bone marrow arising probably from a single cell type, and characterized chiefly by multiple foci of origin, a uniform and specific structure composed of plasma cells or their derivatives, rare metastases, albumosuria and a fatal termination.

Brief History

The first to study a case of multiple myeloma was Watson (1845), who called McIntyre and Bence-Jones in consultation. In 1846 Dalrymple made a microscopic examination of two affected ribs. McIntyre (1850) described it as "Mollities Ossium." Rusticky (1873) claimed the disease was limited to bones and named it myeloma. Buch (1873) described the disease as primary multiple sarcoma of bone marrow; Zahn (1885) as senile osteomalacea, and Marchand (1886) as myelogenous pseudoleukemia. Kohler (1889) called attention to the nearly constant occurrence of albuminuria and peculiar nature of protein involved.

After awakening interest in the disease in Italy in 1897, Bozzolo (1898) analyzed 135 case reports. Wright (1910) indentified tumor cells with plasma cells. Martelli (1913) reviewed the literature in Italy, Walgren (1916) in Sweden and Rosenbloom (1916) in America. In 1928 Geschickter and Copeland reviewed the literature of 425 cases and added thirteen cases placed at their disposal by Bloodgood. The last noteworthy report came from the Mayo Clinic (1942) by Gormley, Pollock, Hall and Beizer. They collected from January 1, 1924 to December 31, 1936—eighty-six cases and to December 31, 1939, forty-one cases, making a total of 127 cases.

Etiology

Multiple myeloma occurs in later life; 80 per cent between forty and seventy years of age, the peak at fifty-five, and the youngest reported at two years. This is the same period when malignant tumors prevail, especially the skeletal tumors, like metastatic carcinoma Myeloma is twice as frequent in males. Heredity, infection, trauma (20 per cent) and blood disturbances (subleukemic leukemia) are all marshalled as etiologic factors. It attacks all races and has been found in England, America, Italy, Scandinavia, Russia, Holland, France, Switzerland, Canada, Australia, South America and Germany. Three to four cases have been found in 4,000 to 9,000 at autopsy. Figures vary greatly, depending perhaps on the search and skill of the pathologist.

Clinical Characteristics

The clinical course of multiple myeloma usually reveals characteristic pains, tumors, fractures and deformities with their accompanying pulmonary, neurologic, nephritic, gastro-intestinal, hematologic and glandular changes and disturbances. In the early stages the pain is vague, intermittent, insidious, rheumatic, wandering and often confined to the back. In 7 per cent of the cases it is located in the lumbar region while in 20 per cent, it is confined to the ribs and chest and radiating or girdle in character. Sometimes it radiates down the lower or upper extremities. Motion or pressure usually aggravates the pain. Then comes a dramatic incident, frequently associated with sudden effort like chopping wood or falling. The pain becomes intense and fracture takes place, often attended by collapse and prostration. As the fracture heals the severe pain subsides and intermittent pains, remissions and exacerbations follow. Then again relative freedom from pain with symptomatic relief may be experienced for some time, until finally the last stage complicated by pulmonary, neurologic and gasro-intestinal disturbances before death, is accompanied by recurrent and progressively more intense pain.

The bone tumors vary from the size of a pea to a hazelnut. The outstanding feature of these tumors is their distribution and multiplicity. In 90 per cent of the cases they involve the ribs, sternum, clavicle and spine. About 40 per cent shows involvement also of the skull and lower extremities. Patients become aware of the tumors by tenderness, palpation, pulsation and pathologic fractures. They are described as elastic, yielding, pliable, malleable and painless except in later stages. Sometimes they decrease very rapidly in size, perhaps due to hemorrhagic absorption, so Roentgen therapy cannot be properly evaluated.

The deformity produces kyphosis (60 per cent), flattening and telescoping of the spinal column. Bowing of the tibia as in Paget's disease or marked bending as in osteomalacia or globose malunion like in von Recklinghausen practically never occurs. The patient stands with protruding abdomen and walks with caution. Tumors may be palpated along the ribs and sternum and crushing of vertebrae and shortening of spinal column is common. In skull involvement there may be interference with mastication or the teeth may fall out as the skull increases in size.

Fractures and dislocation of ribs, clavicle, et cetera, occur spontaneously and in most recent studies appear twice as frequently as metastatic tumors. Multiple fractures, both united and ununited, may be found aiding in the production of pulmonary disorders like bronchitis, emphysema, atelectatic areas, hypostatic pneumonia, asthmatic attacks, pleurisy and terminal pneumonia with empyema. Pressure on the heart from crushed vertebrae or fractured ribs may cause dyspnea, anginal pains and myocardial decompensation. Nervous involvement manifests itself frequently by neuralgia, paraplegia, radiculitis, lightening pains, dysuria or incontinence, Babinski sign, deglutition disturbance, partial blindness or other mental and psychic phenomena.

Gastro-intestinal manifestation like diarrhea, colicky pains, enterocolitis, hematemesis, melena, peptic ulcer and achlorhydria are found mostly as terminal complications. All types of nephritides occur, depending on the renal condition before the involvement by the myeloma. Where no previous nephritis existed, the blood pressure is low. Cystitis, pyelitis, and abscesses in the kidney follow infection secondary to the paraplegias. Bence-Jones bodies occur in the urine in 60 to 80 per cent of the cases.

Metastases are not limited to the bones. They have been found in the liver, spleen, stomach, duodenum, lymph nodes, tonsils, thyroid, suprarenals, ovaries, meninges and as free tumor cells in the blood vessels.

Blood studies reveal primary to secondary anemias, polycythemia and leukopenia (pseudoleukemia or chloroma). In only 23 per cent of the cases is the red blood counted over 4,000,000. The white blood count is normal in 7 per cent of cases, presents a leukocytosis in 23 per cent and a leukopenia in 7 per cent. Blood smears reveal normoblasts, megaloblasts, poikilocytosis, anisocytosis, myelocytes 1 to 10 per cent, eosinophils 1 to 5 per cent and in general mononuclear increase with relative lymphocytosis.

A greasy smear of the blood and rouleau formation is reported by Morissette and Watkins. The blood cholesterol is usually reduced; the albumin-globulin ratio is reversed, but the blood uric acid, calcium, phosphorus, phosphatase, serum sulfate, serum protein, urea, creatinine and sedimentation rate are all elevated.

Roentgen ray findings are mostly in the spine and thoracic cage. Sometimes the skull and pelvis are involved also. The ribs and the sternum show multiple punched out, pea to orange sized areas, and the fifth to twelfth dorsal vertebrae are those in which pathologic fractures are usually found. The distortion of the vertebrae by the globulous tumors and disappearance of discs with rarefaction often leads to a shortening of the spinal column.

Diagnosis, Prognosis and Treatment

Early cases may be confused with lumbago, spondylitis, osteomalacia, osteitis fibrosa cystica or visceral carcinoma with skeletal metastases or even with bronchitis, pleurisy or emphysema. Later, when neural involvement (visceral pains, paraplegia, urinary incontinence, hypostatic pneumonia), chronic nephritis (Bence-Jones, ascending urinary infection), blood changes (anemia, lowered platelets, et cetera) and terminal enterocolitis appear, the diagnosis is readily entertained. A positive diagnosis can be made by biopsy from a sternal puncture.

The prognosis is grave. The average patient after the disease is discovered lives one to two years. Some on record have lived over twelve years. The treatment is limited mostly to symptomatic and palliative measures.

Case Report

The patient was a woman, aged fifty-six, single and housekeeper. She entered the hospital September 30, 1941. For years she suffered from attacks of bronchitis, headaches, dizziness, nervousness and frequent "bouts of fever." She slept well, drank daily one to two cups of coffee, smoked moderately and occasionally took an alcoholic drink. In the fall of 1937 she fell and injured her back.

The present illness began with a low backache following a fall September 15, 1941. The injury aggravated the pre-existing cough and cramps appeared in the legs and toes. At times faintness, weakness and a lack of sphincter control were noticed.

The examination showed a well-nourished but anemic-looking woman with deafness in the left ear, small tonsils, chronic bronchitis, rigid spine with thoracic kyphosis, arthritis of the knees, ankles and hands and varicose veins of the legs. The blood pressure read systolic 170, diastolic 100 mm. of mercury. Urinalysis revealed albumin 4 plus, sugar negative and hyaline casts in the sediment. Bence-Jones protein was present in the urine. Blood examination showed hemoglobin 50, red blood count 2,910,000, white blood count 16,200, polymorphonuclear 56, lymphocytes 38, monocytes 5, eosinophils 7. The pulse was 85 and regular; temperature 100.4 degrees and respirations 20 to the minute. Roentgen findings revealed calcification of the aortic arch, compression fractures of the bodies of the 6th, 8th and 9th dorsal vertebrae associated with much decalcification of the spinal column and pelvis. Hypertrophic changes in the dorsal and lumbar regions were present as well as a thoracic kyphosis.

Blood chemistry gave the following findings: blood calcium 10.8; blood sugar .143 per cent, creatinine 3.91, urea nitrogen 40.8, total urea 86.88. Phenosulfonephthalein excretion was first hour 15 per cent, second hour 10 per cent, total 25 per cent. Sputum examination showed a mixed flora and no tubercle bacilli. Ewald meal gave no Hcl. acid, but lactic acid, a trace of bile, many streptococcic chains, yeast and fungi were found.

Sternal puncture was done on October 25, 1941, and the hematocrit readings and report read: "fat 13 per cent, plasma 49 per cent, myeloid erythroid 25 per cent, erythroid 13 per cent. Differential: plasma cells 69 per cent, myeloblasts 1 per cent, premyelocytes 8 per cent, myelocytes 4 per cent, band cells 13 per cent, megakarocytes 2 per cent, reticulum cells 3 per cent. Conclusions: there appears to be a marked increase in the myeloid erythroid ratio. Normally, this ratio is about 8 per cent. This indicates hyperplastic activity of the marrow. The predominating cell is one of a plasma cell type. That is, a dark staining cell with an eccentrically placed nucleus. There appears to be a suppression of the erythroid element. Diagnosis: Multiple Myeloma."

The patient left the hospital November 23, 1941, and re-entered March 15, 1943, with the complaints of dyspnea, dizziness, headache, orthopnea, fever, pain in cervical, dorsal and lumbar regions, edema of the ankles, intermittent vomiting and diarrhea, nocturia, weakness, and soreness of the mouth. The blood pressure had dropped to systolic 115, diastolic 68 mm. of mercury. After a month the cardiac decompensation was improved and the patient left the hospital only to re-enter June 11, 1943, unconscious and suffering from additional fractures of the spinal column caused by the myeloma. A left pneumonia and empyema were also present. Fever ranged from 102 to 104 degrees. Death occurred June 13, 1943.

The autopsy diagnoses read: (1) multiple myelomas, (2) lobar pneumonia, left lower lobe, (3) empyema of the left pleural cavity, (4) cloudy swelling of the heart, liver, spleen, (5) nephrosclerosis.

Discussion

Dr. H. Z. Giffin, Rochester: I have been very much interested in Dr. Lepak's presentation of this complex picture. In the last three or four years I have been especially impressed with the relatively large number of patients with severe anemia and without demonstrable changes in the bones. When the blood smear is examined one finds the "sticky" type of blood picture which has been referred to, a very high sedimentation rate is present, and there is a hyperproteinemia with inversion of the albumin-globulin ratio. Sternal marrow may be obtained for examination and myeloma cells found. Undoubtedly we have been missing the diagnosis in a considerable number of cases of this type. Lately, I have also been interested in the possible relationship between primary diffuse amyloidosis and myeloma. I do not refer to the secondary amyloidosis found in association with chronic suppurative conditions and chronic tuberculosis. Recently, a patient was seen whose presenting complaints were sore and swollen finger tips associated with deep papules on the fingers and also about the nose and a macroglossia; the tongue was three or four times normal size. Macroglossia has been recognized as an outstanding feature of certain cases of amyloidosis. While under observation biopsy of the skin revealed evidence of amyloidosis and, moreover, some of the specimens of urine showed the presence of Bence-Jones protein. On sternal aspiration the bone marrow was found to have the characteristics of myeloma. In the light of the experience with this case and certain cases reported in the literature, I have come to feel that every case of primary diffuse amyloidosis should be investigated for the presence of myeloma.

Dr. C. E. Connor, Saint Paul: The solitary extramedullary plasmocytoma may come first to the otolaryngologist because its most frequent site of location is in the mucous membrane of the upper respiratory tract, the nose, accessory sinuses, nasopharynx, pharynx and larynx.

There is a marked divergence of opinion concerning the frequency of occurrence, the etiology and the malignancy of these tumors. Modern textbooks usually dispose of them by saying that they are fairly common and usually benign but the Mayo Clinic, in a series of 2,885 malignant tumors of the nose, nasopharynx, pharynx and larynx, found only eleven plasmocytomata. This indicates definitely that they are rare, not common.

Many writers think plasmocytomata are of inflammatory origin because plasma cells are so frequently found, together with lymphocytes, in chronic inflammatory lesions; others, considering their histologic structure and clinical course, believe them to be malignant.

When solitary extramedullary plasmocytomata are seen early and while still confined to the mucous membrane, local treatment may result in apparent complete cure for as long as eighteen years; local cure for as long as eight years has been followed by generalized metastasis in the form of multiple myelomata. This latter type of result suggests that there may be some relation, as yet unknown, between solitary extramedullary plasmocytomata and multiple myelomata and, together with the fact that the histologic structure gives no indication of the potential malignancy of the tumor, is ample warrant for considering these tumors as malignant.

Dr. H. Z. Giffin: Some one has inquired about our experience at the Mayo Clinic with the treatment of myeloma by radio-active phosphorus. Briefly, I would say that the results have not been satisfactory. Very little evidence of improvement has been seen. Twenty-one patients with myeloma have been treated with radio-active phosphorus in the last sixteen months and seven of these have already died.

Dr. H. L. Ulrich, Minneapolis: Bence-Jones bodies are often reported as not present. This may be due to improper examination of the urine. Acidulation of the urine with nitric acid rather than acetic acid is essential to bring out a positive test. I recently recalled the three diagnostic periods in the evolution of the study of this disease. First, we used to rely mostly on the x-ray examination; then there was a period when biochemical tests of the blood were emphasized, and now the sternal puncture has come into vogue. The latter has increased the reliability of the diagnosis.

ISLET CELL TUMOR OF THE PANCREAS

Report of a case treated by local excision with complete recovery

MARTIN NORDLAND, M.D.
Minneapolis, Minnesota

Up to August, 1945, according to Good, 150 cases of adenoma of the islands of Langerhans had been reported in the literature. The first islet cell tumor was reported in 1902. An increasing number have been reported in the literature in the past decade. As a result of the studies of the pathology of the adenoma of these cases found at autopsy, as well as those that have been removed surgically, Warren, in 1926, suggested the following criteria for the pathological diagnosis of the adenoma of the islands of Langerhans:

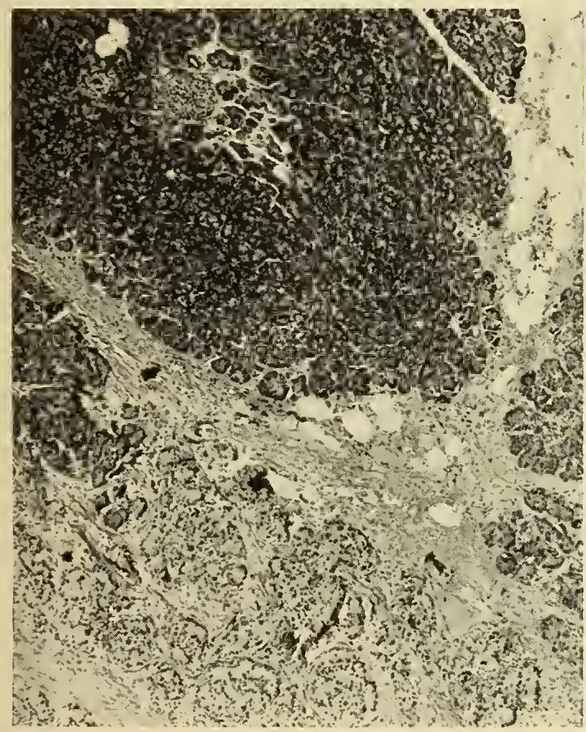


Fig. 1. Typical adenoma of the islands of Langerhans surrounded by a capsule, in the wall of which small ducts and acinar tissue may be seen.

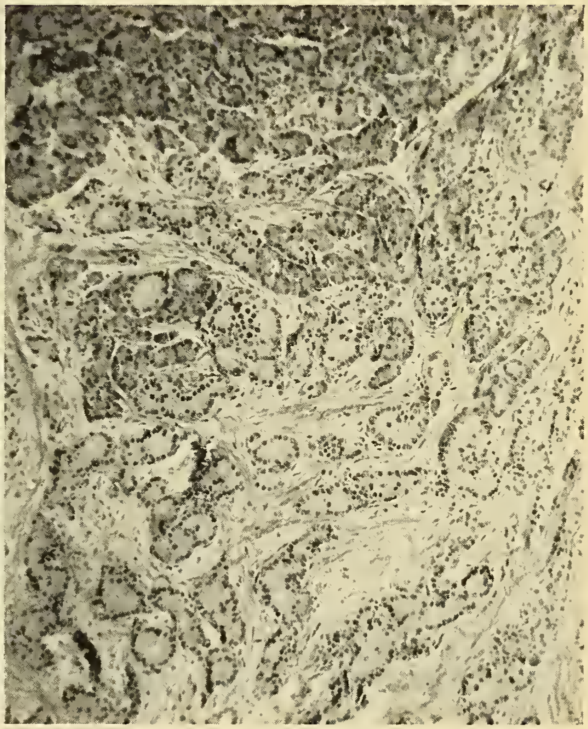


Fig. 2. High power view.

1. That the tumor should be at least 1 mm. in diameter.
2. That the morphology and arrangement of cells composing the tumor should resemble those of the islands of Langerhans.
3. That the tumor should have a capsule.
4. That the surrounding acinar tissue should be compressed.

A review of the studies of the pathology of the adenoma of Langerhans has been well presented in a recent article in Surgery by Dr. Lewis P. Good. The detail of these studies is not relevant in this report. The clinical picture presented by these cases was not recognized until after the discovery of insulin in 1922. Observers noted a similarity of symptoms in patients with insulin shock and patients with hypoglycemia resulting from the presence of tumors of the islands of Langerhans.

The symptomatology and clinical signs presented by patients with islet cell tumors have been carefully observed and has led to the presentation of a triad by Whipple which he believes is very useful in making a diagnosis in these cases:

1. Attacks of insulin shock coming on during fasting or an over-fatigued state.
2. Blood sugar findings of 50 mgm. per cent or less.
3. Prompt relief by the ingestion of glucose.

When this triad is present the possibility of islet cell tumor due to an over-supply of insulin must be seriously considered.

Our patient had pre-operatively the triad of symptoms as described by Whipple. The removed specimen fulfilled the criteria for the pathological diagnosis of an adenoma of the islands of Langerhans as suggested by Warren (Figs. 1 and 2). The patient made an excellent recovery after removal of the tumor. For these reasons the following case is reported that it might be added to those previously reported, and that it might be of interest to you.

The patient was a woman, forty years of age, who was admitted to the Northwestern Hospital in Minneapolis, with a history of five years' standing. Attacks of weakness, profuse perspiration and prostration associated with pallor recurred with increasing frequency. These attacks occurred mainly after long hours of fasting, frequently occurred in the morning before eating. With the ingestion of food, especially sugar or orange juice, the symptoms would disappear. A few weeks before her admission this syndrome became more severe and the morning before her admission to the hospital she was found unconscious. It was noted that she had sought medical advice frequently but no diagnosis had been made. After her entrance to the hospital it was noted that it was difficult to arouse her. She perspired profusely and her blood pressure was very low.

The only significant fact with reference to her past history was that she had been treated for a questionable toxic goiter by x-ray about a year before admission to the hospital. No symptoms of hyperthyroidism were present at the time of admission. There had been a recent loss of weight.

The significant findings of the physical examination were a rough systolic murmur in the precordium, mainly at the base, with marked hypertension of 226/100. The abdomen was essentially negative.

Laboratory findings: Electrocardiogram suggestive of hypertensive heart disease. Gastro-intestinal study revealed small hiatus hernia. Cholecystogram was normal. Skull films for sella turcica were negative. Glucose tolerance curve started low (53 milligrams per cent) and later followed a diabetic pattern, at three hours showing 180 milligrams per cent. On another occasion the glucose tolerance showed: fasting 33 milligrams per cent, maximum level at one and one-half hours 300 milligrams per cent and at four and one-half hours, 33 milligrams. Cephalin cholesterol was one plus in the twenty-four and forty-eight hours. Serum bilirubin and prothrombin time were within normal limits. Hemoglobin was 57 per cent. These findings were all made by Dr. R. S. Ylvisaker to whom goes the credit of a positive pre-operative diagnosis of an islet cell tumor of Langerhans.

The patient was eventually in good condition for operation. The abdomen was opened through a long transverse upper abdominal incision. This provided a good exposure. The pancreas was approached through the gastrocolic omentum. The patient was quite obese and retroperitoneally there was a dense layer of fat which made it difficult even to recognize the pancreas. The pancreas was palpated through its entirety and a round firm tumor was found at the junction of the neck and the body of the pancreas. This was the only tumor mass found. Removal of the mass revealed that it weighed 5.2 gm. and measured 23 mm. in diameter.

The report by the pathologist was as follows: "The adenoma is surrounded by normal pancreatic tissue; the parenchymal structure of the tumor is almost entirely ductal in origin with a large component of connective tissue stroma. Gomori stain is questionable."

A Penrose drain was placed down to the pancreas at the site of excision of the tumor and the abdomen closed. It is always advisable to drain after an operative procedure on the pancreas. The immediate postoperative condition of the patient was good. Insulin was required but after forty-eight hours the blood sugar level was normal and the glucose tolerance test was that of a normal individual.

Of the 135 cases reported by Good, seventeen cases, or 8 per cent contained multiple tumors. In other words, in one out of every twelve cases of hyperinsulinism due to adenoma the tumor will be multiple. When multiple tumors occur, 75 per cent of them will be found in close proximity to each other while in 25 per cent they are widely separated.

According to the investigators the tumors predominate in the tail where they are superficially located. In the head or body the tumor is usually more deeply situated. This was true in the case here presented. When the tumors are multiple and found in the tail of the pancreas it is necessary to do a resection of that portion of the gland.

Medical therapy can be employed in some of the milder cases with this diagnosis. Cure can only be obtained, however, with the surgical removal of the tumor causing the hyperinsulinism.

This patient who had been severely ill for five years before operation has remained entirely well, is very comfortable physically and much happier mentally. She stated that she had always been irritable and that her family complained about her disposition. She admits that she has had a complete personality change.

Dr. Nordland also reported another case of carcinoma of the duodenum with operation (to be published elsewhere).

Discussion

Dr. H. L. Ulrich, Minneapolis: I saw this man in consultation about four months after the symptoms started. There was a history of intermittent jaundice. At no time was he entirely free from jaundice. The stools at times were clay colored, then again normal in color. He had had episodes of pain, fever and chills. His physical examination revealed no loss of weight; there was secondary anemia, distention of the abdomen, with pain on palpation and big liver and spleen. My impression was that he had pancreatitis or a stone in the common duct. I could not entirely dismiss the idea that he might have a malignancy. I thought he ought to be explored. Before doing this, an x-ray of his chest was done. This proved negative and he was explored. It was a total surprise to me. I had never thought of a carcinoma of the duodenum. This particular type of tumor is exceptionally rare.

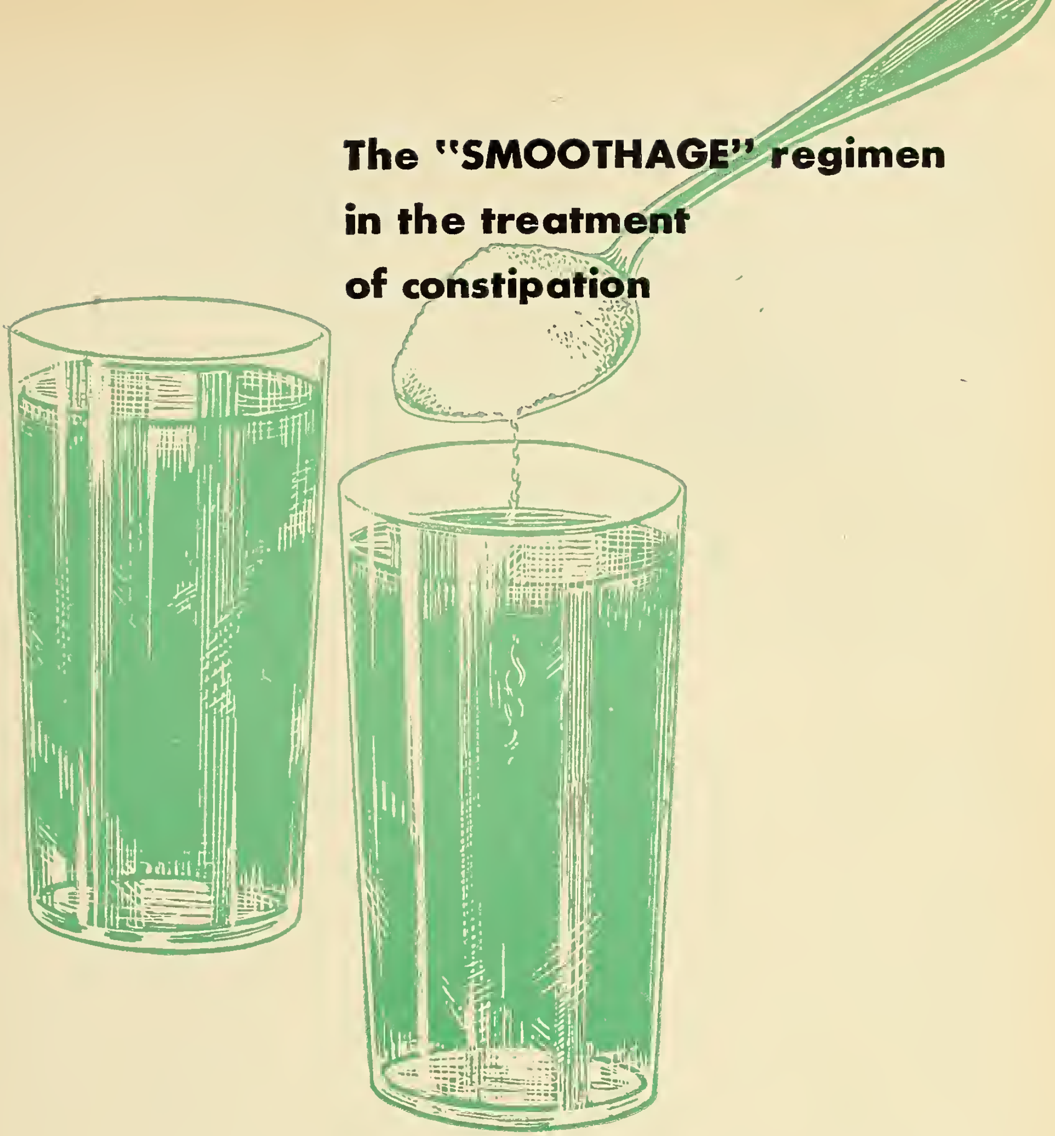
The rarity of tumors of the duodenum is illustrated by these figures. In Ewing's Pathology it is mentioned. Robertson collected forty cases, the major portion of which were in the mid portion. Howard, *American Journal of Medical Sciences* (206:735, 1943) reports 117,433 postmortems from 1870 to 1937, of which fifty-five were cancers of the duodenum, a percentage of 0.047 per cent. Matter and Hartman, in the *Journal of the American Medical Association* (99:1953, 1932) report that of 176,000 admissions to the Ford Hospital of Detroit, there were six cases of carcinoma of the duodenum, five of them exhibiting jaundice. Eusterman, of the Mayo Clinic, reports the stenosing type more common than those exhibiting jaundice. The growth is three times more common in the male. Howard attempted a clinical syndrome of these tumors. To me there is no particular syndrome. Gastric symptoms, pain, anorexia, weakness and loss of weight, nausea, vomiting, recurrent attacks of obstruction symptoms go with any of the areas contiguous to the duodenum. Anemias, severe and mild, occur, and may be either microcytic, macrocytic, hypo- or hyperchromatic. The latter is more common. Occult blood is quite constant. This again is a constant in malignancy anywhere in the gastro-intestinal tract. From the symptomatology alone there is no sure diagnosis. X-ray examination in proper hands can make the diagnosis, although it is a very difficult job to do.

I called up the physician in charge of this man after he left the hospital and asked him what was the manner of his death. He reported the man died of starvation. There was no jaundice, no obstruction, but he had an intense aversion for food.

In regard to the adenoma of the pancreas so successfully recovered and with such a splendid clinical result, I would like to recall an incident which occurred in this

(Continued on Page 612)

The "SMOOTHAGE" regimen in the treatment of constipation



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SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 610)

room which was the beginning of a clinical development of great historic import. In 1925 I presented the case of a man before this Academy who had had hypoglycemic symptoms for some time. These attacks were so frequent that his wife had to sit up nights and feed him candy or orange juice to keep him from these attacks. This man had a blood sugar tolerance curve which was typical of diabetes. I presented this data to this group, hoping for some suggestions as to diagnosis. But no one volunteered any opinion. He went to the Mayo Clinic! Here they kept him going with a Woodyatt pump which delivers a given amount of sugar intravenously per kilo of body weight in a given time. They at first thought he had liver insufficiency but all liver tests were negative. He was explored. A carcinoma of the islets of the pancreas was found which had metastasized to the liver. They were able to extract insulin from one of these metastatic foci in the liver.

The report of this case by Dr. Wilder made the whole clinical world realize that a malignant growth and even its metastases could function like the normal tissue from which it was derived. This applied to other endocrine glands led us to an entirely new concept of the physiology of the endocrinopathies and today any endocrine gland, particularly the more accessible ones, are surgically attacked when there is clinical indication of hyperfunction.

Dr. Waltman Walters, Rochester: I have enjoyed Dr. Nordland's presentation very much. I haven't a great deal to add, except to mention some of the mistakes I have made in the management of similar cases.

In one patient with a hyperfunctioning adenoma of the islands of Langerhans of the pancreas, which was located at the junction of the body and tail, the approach to the tumor was made through the gastrocolic omentum, as Dr. Nordland did in his case. After the removal of the tumor, the cut edges of the pancreas were sutured together with silk sutures. Contrary to my usual practice of placing a drain down to such an area to enable pancreatic secretion to find its way to the exterior, I neglected to do it in this patient's case. Four or five days later, a palpable mass, approximately 10 cm. in diameter, was noted in the epigastric and left hypochondriac areas. A small amount of barium was given to the patient orally which showed the stomach to have a fishhook conformation as a result of its being pushed mesially. The diagnosis was that pancreatic fluid had accumulated in the lesser peritoneal cavity. This was found to be the case when the incision was made. An opening was made in the gastrocolic omentum and approximately 800 c.c. of clear pancreatic secretion drained out.

It is not always easy to find these small hyperfunctioning tumors in any of the ductless glands, since a tumor only a few millimeters in diameter, as Cushing showed in his description of basophilic adenomas of the pituitary, may produce symptoms of hyperfunction. When hyperfunctioning adenomas of the pancreas or suprarenal are sufficiently large so that they can be seen or palpated, their removal is easy. When tumors are small and but a few millimeters in diameter and located in the substance of the gland, they, of course, are not visualized nor can they be palpated. Obviously, the removal of such tumors necessitates the removal of a portion of the gland containing the tumor.

One patient upon whom I performed a subtotal pancreatectomy, because of surgical symptoms of hyperfunctioning tumor of the islands of Langerhans producing hyperinsulinism, a fringe of the pancreas was left posterior to the duodenum. The patient continued to have symptoms subsequent to operation and died at his home two years later. Through the kindness of the local physician, we were able to obtain the duodenum and remaining portion of the pancreas. The pathologist, on examining the pancreas and attached duodenum by inspection and palpation, was not able to feel or see a tumor, but when serial sections were made a hyperfunctioning adenoma about 8 mm. in diameter was found.

Malignant tumors of the papilla of Vater producing obstructive jaundice are more amenable to surgical exploration with much better results and greater prolongation of life than when the same operation is performed at the head of the pancreas.

In a review of seventy-six cases of radical operation for carcinoma of the ampulla of Vater by the late Dr. Verne C. Hunt† in 1935, he found one case reported by Koerte, where the patient lived for twenty-two years without a recurrence and another reported by Lewis who lived eight and one-half years, and many who lived from two to eight years after the removal of malignant tumors from the papilla Vater. Certainly, in cases of this sort, a radical operation and removal of that portion of the duodenum containing the lower end of the common duct, and restoration of the gastro-intestinal and biliary continuity can and should be carried out and the risk of the procedure is not excessive. On the other hand, with the employment of such surgical technique in the treatment of cancer at the head of the pancreas, the operative risk is higher and the results have not been too good. It is true that prolongation of life for two or three years has been reported in many such cases, but I have had equally good palliative results by relieving the jaundice by simple anastomosis between the gall bladder and stomach or duodenum. I am inclined to think, in studying the reported results of such cases and knowing the frequency with which metastases have recurred in the pancreas, that they are not unlike malignant tumors of the kidney, the resection of which, without the removal of the entire kidney, is usually followed by recurrence of the malignant growth in the remaining portion of the kidney. I think that Dr. Nordland did very well to determine the cause of the biliary obstruction in his patient. Many of these tumors of the papilla Vater are small and difficult to palpate and I am sure that some of them are missed upon exploration.

A few days ago I operated on a patient who was referred to me by a surgical friend of mine who had operated on his biliary tract twice, the last time because of what he believed to be an injury to the duodenum. Upon operation, I found the common bile duct to be hugely dilated. Exploration of the lower end of the duct with a stone scoop brought out a small piece of tissue which, when examined microscopically, proved to be a grade I adenocarcinoma of the duodenum. The lesion was so small that I couldn't feel it and the patient's condition was too poor to attempt a radical removal. An external drainage of the duodenum was performed and I am hoping to do a radical operation when his condition permits.

The meeting was adjourned.

A. E. Cardle, M.D.
Secretary.

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†Hunt, V. C.: Transduodenal resection of the ampulla of Vater for carcinoma of the distal end of the common duct. Surg., Gyn., & Obst., 61:651-662, 1935.

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1. Freed, S. C., and Greenhill, J. P. (1941), J. Clin. Endocrinol., 1:983, December.

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In Memoriam

WALTER D. SHELDEN

Dr. Walter D. Shelden, emeritus member of the staff of the Section on Neurology of the Mayo Clinic, Rochester, Minnesota, died February 13, 1946 at his home in Rochester; he succumbed from a heart ailment.

Dr. Shelden was born February 2, 1870, at Windom, Minnesota; received the degree of B.S. in 1891 from the University of Wisconsin, and a M.D. in 1895 from Rush Medical College; was an intern at Cook County Hospital, Chicago, from 1895 to 1897 and studied at Vienna from 1901 to 1903. He practiced medicine at Reedsburg, Wisconsin, from 1897 to 1901 and at Minneapolis from 1903 to 1913. Dr. Shelden entered the Mayo Clinic in 1913 as head of the Section on Neurology. He was also professor of neurology. Mayo Foundation, Graduate School, University of Minnesota. He was a member of the American Medical Association, the American Neurological Association, the Minnesota Society of Neurology and Psychiatry, the Central Neuropsychiatric Association, the American Psychiatric Association, the Osler Medical Historical Society, the Alumni Association of the Mayo Foundation, Alpha Kappa Kappa, Alpha Omega Alpha, and Sigma Xi. He is survived by his wife and two sons, both of whom are physicians.

It is evident that Dr. Shelden was not deterred by the difficulty of uncharted ways because, when he entered his chosen field, research had yet to uncover many of the facts on which the science of neurology now rests. Dr. Shelden's mastery of his subject; his expertness in golf, in tree culture and in woodwork; his great human tolerance and his totally unpretentious manner springing from a nature free of pretense endeared him to all.

ROBERT GLENN ALLISON

Dr. R. G. Allison, well-known roentgenologist, with offices in Minneapolis and Saint Paul, died at Northwestern Hospital March 20, 1946, at the age of fifty-eight.

He was born in York, South Carolina, November 25, 1887, the son of William Meek Allison and Nancy Glenn Allison. He attended York High School and the University of Maryland, where he received his M.D. degree in 1912. Postgraduate work was carried on at Trudeau Sanatorium, Saranac Lake, New York, and at Cornell University, New York.

From 1912 to 1914 he served as house physician at Trudeau Sanatorium, and from 1919 to 1920 as radiologist at the Municipal Tuberculosis Sanatorium, Chicago, and at Harper Hospital, Detroit, Michigan.

In 1920 he entered private radiological practice in Minneapolis, and became assistant professor of radiology at the University of Minnesota medical school. Later he opened a second office in the Lowry Medical Arts Building, Saint Paul. He was a staff member of the New Asbury Hospital, Abbott Hospital, Northwestern Hospital and Glen Lake Sanatorium.

Dr. Allison enlisted as First Lieutenant in the Medical Corps in 1917, and was discharged February 26, 1919, as Captain.

He was a member of the Minnesota Club of Saint Paul, the Minneapolis Club, the Minneapolis Athletic Club, the Minnekahda Club, the American College of Radiology, the American Roentgen Ray Society, the Radiological Society of North America, the Minnesota Academy of Medicine, the Hennepin County Medical Society and the Minnesota State and American Medical Associations.

Dr. Allison married Helen Bullitt Lowry on May 5, 1922. His widow and one daughter, Margaret Glenn, survive him.

This ability in his chosen specialty and his charming personality made him an outstanding figure among his friends and associates.

MARTIN LUTHER GOLBERG

Martin L. Golberg was born July 30, 1876, at Rock Dell, near Rochester, Minnesota, the son of Olmsted County pioneers. His earliest recollections of medicine were associated with the Mayos, as the elder Doctor Mayo was the family physician. He attended Austin Normal and Luther College at Decorah, Iowa. He entered Hamline with a B.S. degree and was graduated from there in 1901, *cum laude*.

Doctor Golberg first located in Twin Valley, Minnesota, for a few years. He then took postgraduate work in eye, ear, nose and throat diseases in Chicago and practiced a few years in Minneapolis, after which time he moved to Jasper, Minnesota, where he remained for five years. He then returned to Minneapolis, where he practiced the last twenty-four years.

Dr. Golberg was apparently in good health until shortly before his death. He was at home three days the week before he died but returned to his office the two days preceding his death. He suffered a coronary attack and died on February 26, 1946.

In the medical field Doctor Golberg served as medical examiner for various insurance companies and as health officer of Norman, Rock, and Pipestone Counties. He was a member of Hennepin County Medical Society. Minnesota State and American Medical Associations. He

(Continued on Page 616)

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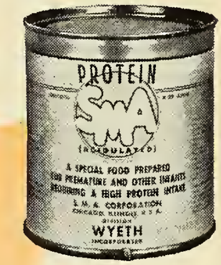
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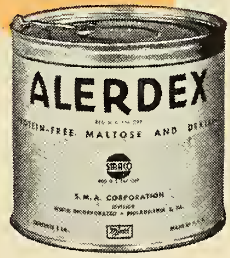
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MARTIN LUTHER GOLBERG

(Continued from Page 614)

was also a member of many fraternal orders, among them Minnehaha Masonic Lodge, and Scottish Rite Lodge, Valley of Saint Paul, and Osman Temple Shrine of Saint Paul. The Masonic lodge had charge of funeral services which were held at the Barney Anderson & Son Funeral Home on March 2, with interment at Acacia Park Masonic Cemetery.

Dr. Golberg is survived by his wife, Emelia Karen, two daughters, Mrs. Joseph P. Facette of Superior, Wisconsin, and Mrs. J. Norman Bong of Minneapolis, a grandson, Dr. Douglas E. Bong, now serving as dental officer on the *U.S.S. Massachusetts*. He is also survived by two brothers, O. O. Golberg and Andrew Golberg, both of Los Angeles and a sister, Mrs. Martin Jacobson, of Brocket, North Dakota.

WILLIAM HENRY PHILLIPS

Dr. William H. Phillips of Jordan, Minnesota, died April 13, 1946, at the age of seventy-six.

He was born in Providence, Rhode Island, May 5, 1871. He graduated from the University of Minnesota Medical School in 1894. After interning at St. Joseph's and Ancker Hospitals, Saint Paul, he began practice in January, 1895. He served as a major in World War I.

On June 10, 1945, his friends celebrated his completion of fifty years in the practice of medicine by tendering him a dinner and ceremonies at the high school auditorium in Jordan, which was attended by 500 friends.

WILLIAM E. ROCHFORD

Dr. William E. Rochford, Minneapolis, died April 3, 1946, at the age of eighty-six. Dr. Rochford was born December 28, 1859, in Albany, New York. He obtained his medical degree from Bellevue Hospital, New York City, in 1889.

Though having the handicap of being blind the last thirty years of his life, he was chief surgeon for the Milwaukee Railroad for fifty years.

He was also a former chief of staff of St. Barnabas and Northwestern Hospitals, and was a member of the Hennepin County Medical Society and the Minnesota State and American Medical Associations, the Western Surgical Association, a charter member of the American College of Surgeons and a diplomate of the American Board of Surgery.

Dr. Rochford is survived by two daughters, Mrs. Ruth Melin of Santa Barbara and Mrs. H. M. Russell-French of Durban, South Africa, and three sons, William of Houston, Texas, Daniel of New York City, and Philip of Minneapolis.

EMANUEL Z. SHAPIRO

Dr. Emanuel Z. Shapiro, Duluth, passed away March 22, 1946, at the age of sixty.

Dr. Shapiro was born in Poland, May 25, 1895. He attended high school at Eveleth, Minnesota, and obtained a B.S. degree from the University of Chicago in

(Continued on Page 618)

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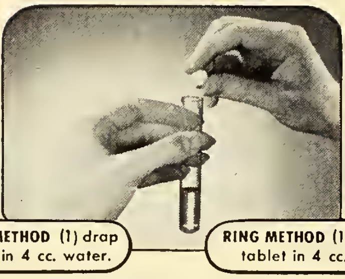

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EMANUEL Z. SHAPIRO

(Continued from Page 616)

1908. He received his M.D. degree from Rush Medical College in 1910. He interned at Cook County Hospital. On two occasions, in 1924 and 1928, he took postgraduate work in Urology and Dermatology in Vienna.

Dr. Shapiro was a member of the staffs of St. Luke's and St. Mary's Hospitals, and was a member of the St. Louis County Medical Society and of the Minnesota State and American Medical Associations.

He is survived by his widow, a daughter, Marion, and two sons, both recently discharged from the service—Richard, who is at the University of Chicago medical school, and Newell, attending school at Berkeley, California.

MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 605)

peptic ulcer. I refer to the excessive continuous secretion of gastric juice which occurs in the empty stomach of these patients and which we have found to be neurogenic in origin. I am convinced that there is a good deal to psychosomatic medicine and I should like to see the men who practice that method make use of quantitative measurements whenever they are available. In this case, for instance, it would be most interesting to find out if psychotherapy can decrease the continuous secretion of the empty stomach in ulcer patients and produce a parallel amelioration of symptoms. Such findings would mean more to most surgeons than the most subtle manipulation of words.

Dr. Wangensteen has pointed out that dilatation of the stomach has been observed to follow resection of the lower end of the esophagus in which presumably the vagus nerves have also been excised. I should like to emphasize again that we have found a profound decrease in the tonus and motility of the stomach after section of the vagus nerves and that these effects are most marked for the first three or four days following the operation. If the stomach is kept decompressed during this period, a moderate but definite increase in tonus and motility occurs. If decompression is not done following the operation, an acute dilatation of the atonic stomach may readly occur as a result of swallowed air and the accumulation of secretion.

In reply to Dr. Barron's question concerning the indications for vagus section, I should like to point out that the majority of the patients operated upon to date represent failures of medical management. They are patients who have had ulcers for many years with repeated recurrence of symptoms, repeated severe hemorrhages; in several cases with perforations, and a large number with pyloric obstruction. For the most part, these patients have been referred to surgery and accordingly, section of the vagus nerves has been carried out as a substitute for the more radical and extensive operation of subtotal gastrectomy. It perhaps ought to be pointed out in this connection, however, that the clinical relief following adequate section of the vagus nerves is greater than that secured even by successful medical management. In view of this fact and taking into consideration the difficult and disagreeable features of medical treatment for ulcer, it is quite possible that the operation of vagus section may extend the indications for surgical therapy for this disease.

Ernest R. Anderson, M.D.
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Reports and Announcements

MEDICAL BROADCAST FOR JUNE

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

June		
1—11:30	KUOM-KROC-KFAM	Medicine in the News
6— 1:15	WCCO	Eczema
8—11:30	KUOM-KROC KFAM	Medicine in the News
13— 1:15	WCCO	Rheumatic Fever
15—11:30	KUOM-KROC-KFAM	Medicine in the News
20— 1:15	WCCO	Undulant Fever
22—11.30	KUOM-KROC KFAM	Medicine in the News
25— 1:15	WCCO	Your Community Hospital
27— 1:15	WCCO	Disease of the Gums
29—11:30	KUOM-KROC-KFAM	Medicine in the News

THE AMERICAN CONGRESS OF PHYSICAL MEDICINE

The twenty-fourth annual scientific and clinical session of the American Congress of Physical Medicine will be held September 4, 5, 6 and 7, inclusive, at the Hotel Pennsylvania in New York. Scientific and clinical sessions will be given each day. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 4, 5, and 6. These courses will be open to physicians and to therapists registered with the American Registry of Physical Therapy Technicians. For information concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

SCHERING THOUSAND DOLLAR AWARD FOR MEDICAL STUDENTS

The Schering Award for 1946, a competition open to undergraduate medical students, has recently been announced. Held annually to encourage medical students to acquire further knowledge of various fields of endocrinology, the subject of this year's thousand dollar prize contest will be, "The Role of Hormones in Sterility." Three judges, each prominent in the field of endocrinology, will make the selections, and the award is sponsored by Schering Corporation of Bloomfield, New Jersey, manufacturers of endocrine and pharmaceutical products for the medical profession. For the best thesis submitted on the subject, an award of five hundred dollars will be given. For the second and third best papers, awards of three hundred and two hundred dollars, respectively, will be given. The Schering Award Committee is again receiving an enthusiastic response from medical students in every section of the United States and Canada.

CLAY-BECKER COUNTY SOCIETY

The Clay-Becker County Medical Society held its quarterly meeting in April at the Gopher Hotel in Moorhead. Dr. James W. Duncan, president, reported on the meeting of County Society delegates held in Minneapolis, which he had attended. Discussion during the evening centered on the Federal emergency maternal and infant care program and plans for a prepaid medical care similar to the Blue Cross hospitalization.

The next quarterly meeting will be held at Lake Park Sanatorium and will include a discussion on tuberculosis.

RAMSEY COUNTY SOCIETY

The Ramsey County Medical Society entertained former members of the society who had returned from military service at an informal banquet at the Saint Paul Athletic Club, April 30. Some 260 members and guests attended. Dr. Harry Zimmermann, president of the Society, presided and welcomed the former servicemen on their return to civilian practice. Following the dinner, Dr. W. A. O'Brien of the University Medical School addressed members on "The Trend Toward Medical Specialism." Ninety-eight former members had been in service. The only one to make the supreme sacrifice was Lt. Cmdr. C. H. Mattson.

BLOOD DYSCRASIA

(Continued from Page 577)

sions of the skin. Both of these patients died in our hospital in spite of all treatment. Their histories parallel those of the patients in Cases 1 and 2, except for the cutaneous picture and the terminus.

Treatment in all cases consisted of the repeated transfusion of blood, and administration of liver extract and vitamin supplements. No drugs were administered except to the patient in Case 3; this patient received penicillin intramuscularly.

It may be incorrect to assume that the condition of all these four cases was the same, but it is our opinion that a common factor was, or common factors were, concerned in all four.

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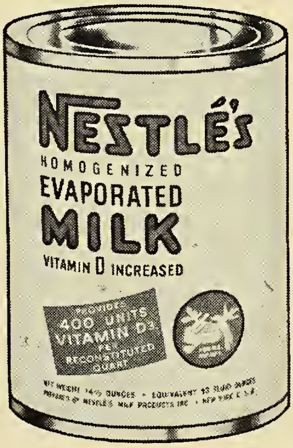
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Carlton, Minnesota

Blue Earth

Dr. Myron W. Weaver talked to members of the Blue Earth County Auxiliary on "Present Legislative Measures" at the Mankato Clinic on April 29, 1946.

Hennepin

On April 22, Mrs. John F. Curtin opened her home to the Hennepin County Auxiliary for its largest fund-raising project of the year, the Easter Monday benefit musical and tea. Over 200 guests were present making it one of the largest held.

The Auxiliary members furnished the entertainment. Among those who entertained were Amy Wohlrabe, a daughter of one of the members, and Mmes. Russell C. Lindgren, D. D. Anderson, and Ivar Sivertson.

A party was also held in the Medical Arts Building lounge to accommodate those who found it more convenient to be down town.

Mmes. R. C. Logefeil, J. B. Carey and G. F. Nordin were in charge of the entertainment, and Mrs. Elmer Dahl was the organizer. Proceeds from these parties will be distributed among the philanthropic projects sponsored by the Auxiliary.

Kandiyohi-Swift-Meeker

All the officers of the Kandiyohi-Swift-Meeker Auxiliary for 1946-47 are from Willmar. Mrs. S. B. Lindley from the State Hospital is president, and Mrs. J. M. Fisher, also from the hospital, is vice president. Mrs. F. P. Fritch and Mrs. D. L. Jacobs are secretary and treasurer, respectively.

Mower

Mrs. Rolf S. Hegge of Austin was hostess to the Mower County Auxiliary on April 5. The following were elected to office for 1946-47: Mrs. H. B. Allen, Mrs. L. O. Flannagen, Mrs. C. L. Sheedy, and Mrs. Harold Rosenthal.

Olmsted-Fillmore-Dodge

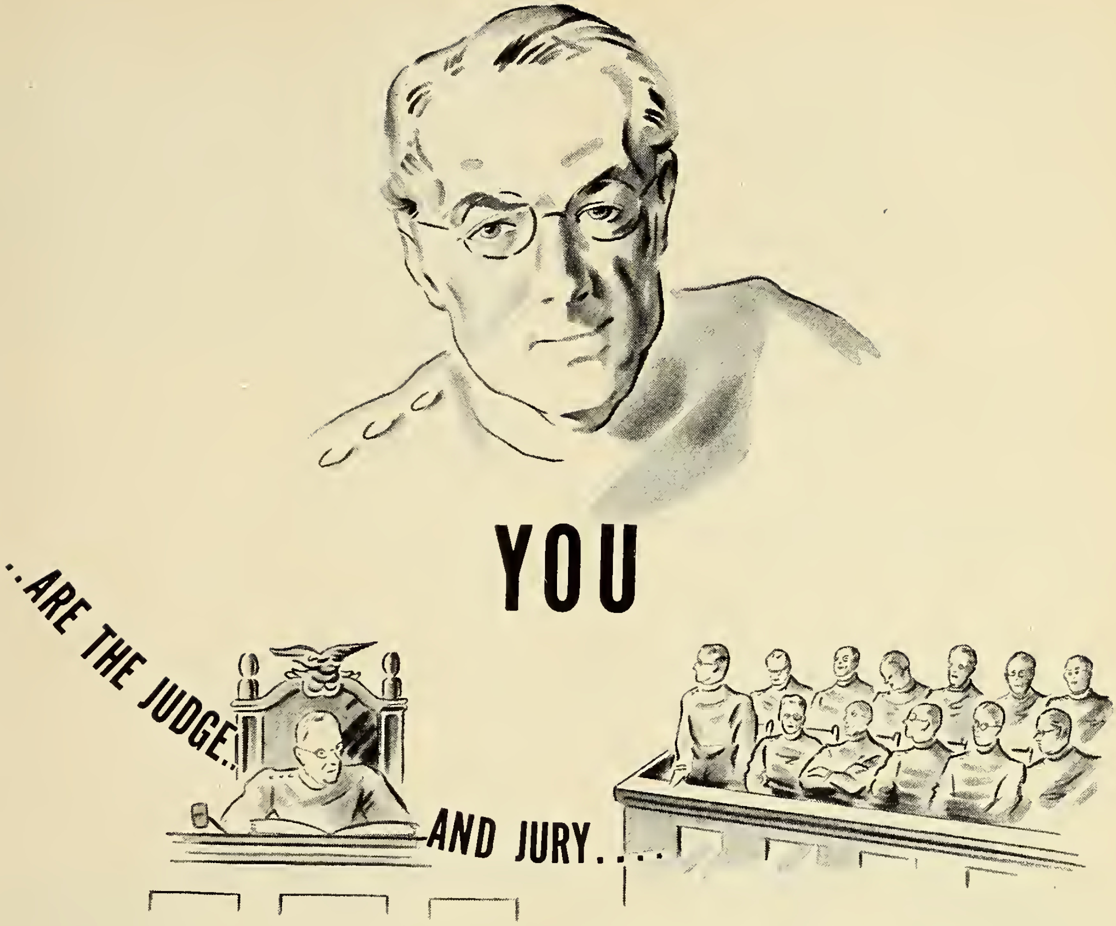
One hundred twenty-five people attended an open meeting at Mayo Foundation House on April 23 at Rochester. Dr. A. R. MacLean spoke on "In Defense of Courage."

New officers are Mrs. W. A. Merritt, Mrs. E. V. Allen, and Mrs. F. M. Feldman, all of Rochester.

Ramsey

Ramsey County Auxiliary finished its surgical dressings for St. Joseph's and St. John's Hospitals at the meeting held April 22 at the Ramsey County Medical library. They also helped the Cancer Society mail out literature.

(Continued on Page 624)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(Continued from Page 622)

Red River Valley

Hotel Crookston, on April 11, was the meeting place for the Red River Valley Auxiliary. Dinner was followed by a short business meeting. Officers for next year will be: Mrs. M. O. Oppegaard, Crookston; Mrs. Edward Bratrud, Thief River Falls; Mrs. A. R. Reff, Crookston; Mrs. C. L. Oppegaard, Crookston.

The group voted to sponsor the cancer essay contests, although only one school has entered—St. Joseph's Academy. War bonds will be the prizes. Judges will be Mrs. L. L. Tygeson, Mrs. C. G. Uhley, and Dr. R. E. Johnson.

Renville

The Auxiliary and Medical Society met for dinner at Olivia Sweet Shop on April 9.

Rice

New officers of the Rice County Auxiliary are Mrs. F. W. Stevenson, president, and Mrs. Norman Lende, secretary and treasurer, both of Faribault.

St. Louis

Mrs. W. A. Coventry was hostess to the St. Louis County Auxiliary on April 9 at which time plans for the open meeting to which 250 guests were invited were made. Mrs. A. J. Bianco, assisted by Mrs. R. N. Mayne, was appointed to be in charge. Dr. Myron Weaver was asked to speak on "Development in Medical Legislation."

Mrs. M. A. Nicholson, with Mrs. W. G. Strobel and Mrs. Cyril Smith, have been very busy furnishing the closet of the Public Health Nurses with equipment which can be taken into the homes they visit. The philanthropic committee is endeavoring to supply the closet with excellent and necessary medical materials.

Southwestern

Southwestern Auxiliary met at the home of Mrs. E. W. Arnold at Adrian on April 9 after the semi-annual banquet which was held jointly with the Medical Society. A short business meeting was held and all officers were re-elected for next year. Mrs. D. E. Nealy is president.

Upper Mississippi

Officers of the Upper Mississippi Auxiliary for 1946-47 will be: President, Mrs. George Holliday, Brainerd; president-elect, Mrs. A. J. Lenarz, Browersville; first vice president, Mrs. G. H. Leemhuis, Aitkin; second vice president, Mrs. A. J. Lenarz, Browersville; secretary, Mrs. A. E. Amunsen, Little Falls; treasurer, Mrs. A. H. Borgesen, Long Prairie.

Waseca

Mrs. J. B. Gallegher of Waseca was hostess to the Waseca County Auxiliary on April 2. New hospital linens were marked. Officers for the year are Mrs. H. M. McIntyre, Waseca, president; and Mrs. George W. Olds, New Richland, secretary-treasurer.

Wright

Mrs. Robert D. Thielen of St. Michael, Minnesota, is president of the Wright County Auxiliary.

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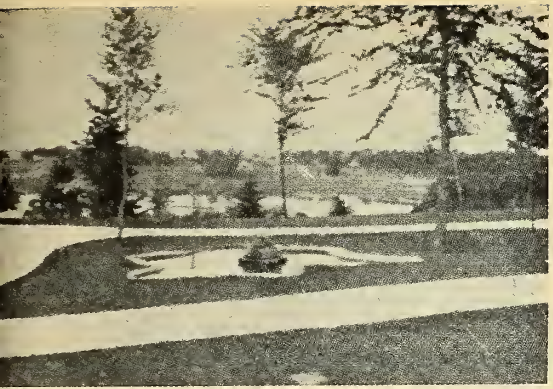

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◆ Of General Interest ◆

Dr. F. H. Magney of Duluth has been reappointed to the Minnesota State Board of Medical Examiners by Governor Thye. Appointments are for seven-year terms.

* * *

Dr. Robert Lyman Nelson has been discharged from the Army and has resumed the practice of internal medicine at 624 Medical Arts Building, Duluth.

* * *

Dr. Arnold J. Chlad announces the opening of his offices at 1261 Lowry Medical Arts Building, Saint Paul. He will limit his practice to surgery.

* * *

Dr. R. E. Nutting of Duluth is the State Chairman of the American Academy of Pediatrics for Minnesota, succeeding Dr. Roger L. J. Kennedy of the Mayo Clinic.

* * *

Dr. and Mrs. Edward Bratrud have returned to Thief River Falls to resume active work, after spending the winter at Phoenix, Arizona.

* * *

Dr. S. J. Raetz, formerly of Maple Lake, has opened offices for the practice of medicine and surgery in the St. Mary's Building at St. Cloud, Minnesota.

* * *

Announcement has been made of the appointment of Dr. Paul G. Polski, of South Saint Paul, as village health officer for the remainder of 1946.

* * *

Dr. Julius T. Gericke reopened his offices in Glenwood on June 15. Dr. Gericke recently returned from several years' service in the Navy.

* * *

Dr. George E. Cardle, physician and surgeon, has resumed his practice in Brainerd in association with Dr. Earl F. Jamieson, with offices in the Lyceum Building.

* * *

Announcement has been made of the appointment of Dr. Floyd M. Feldman, city health officer of Rochester, to the Health Advisory Group of the Minnesota Committee on Local Health Services.

* * *

Dr. Wm. E. Hall, formerly of Saint Paul, has taken over the practice of Dr. S. J. Raetz of Maple Lake, Minnesota. Dr. Hall was recently discharged from the Army where he was a captain in the ETO.

* * *

Dr. Gaylord W. Anderson, Director of the School of Public Health, University of Minnesota, has recently been elected Secretary-Treasurer of the Association of Schools of Public Health.

* * *

Dr. John F. Madden of Saint Paul has been appointed a member of the Editorial Board of the *Quarterly Review of Dermatology and Syphilology* published by the Washington Institute of Medicine in Washington, D. C.

* * *

Dr. William C. Heiam, of Cook, deputy coroner for St. Louis County, talked on cancer at a meeting of the lay committee of the Public Health Service in Virginia, urging periodic examinations as the only guard against the disease.

* * *

Dr. James L. Jaeck has closed his offices at Heron Lake and terminated his practice there. Dr. Jaeck and his family have moved to Minneapolis, but for the immediate future at least, the doctor does not intend to engage in practice.

* * *

While on terminal leave, Lt. Colonel Robert L. Nelson, Duluth physician and surgeon, was presented with the Army Commendation medal for his work as Chief of Medical Service of the 129th General Hospital overseas.

* * *

The reappointment of Dr. Fredolph H. Magney, of Duluth, to the Minnesota State Board of Medical Examiners for a seven-year term has been announced by Governor Thye. Dr. Magney's new term will expire on May 1, 1953.

* * *

Major E. M. Baldigo who, prior to entering the Army, was associated with the Claydon Clinic was in Red Wing on a short visit while on terminal leave. Dr. Baldigo is expected to return to the Clinic as soon as he is discharged from service.

* * *

The War Department has presented Dr. Duncan V. Luth, Duluth physician and surgeon, with a Commendation Ribbon for outstanding service in the China-Burma-India Theatre. Dr. Luth, a lieutenant colonel in the Army, was in service for more than three years.

* * *

After five and a half years in the Army Medical Corps, Dr. Harold C. Johnson has resumed his practice of medicine at Thief River Falls in association with Dr. Orrin G. Linde. Dr. Johnson was on duty in Hawaii, New Guinea and the Philippines for over thirty months.

* * *

Dr. James T. Priestly, of the Mayo Clinic, formerly a lieutenant in the Army Medical Corps, has been awarded an oak-leaf cluster to be added to his bronze star medal for meritorious achievement as Chief of Surgical Service and Commanding Officer of the 237th Station Hospital in the Southwest Pacific.

* * *

Dr. Lawrence H. Heinz and his wife, Dr. Ivy Heinz, of Minneapolis, have rented the offices in Wabasso formerly occupied by Dr. Robert J. Cairns, of Redwood

(Continued on Page 628)

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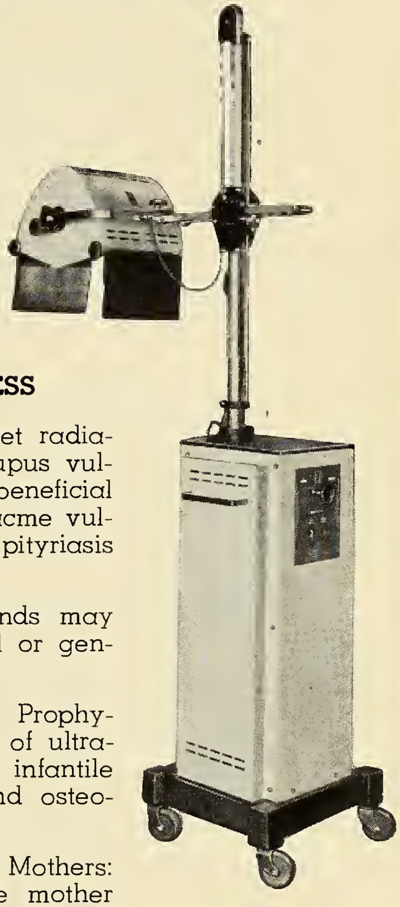

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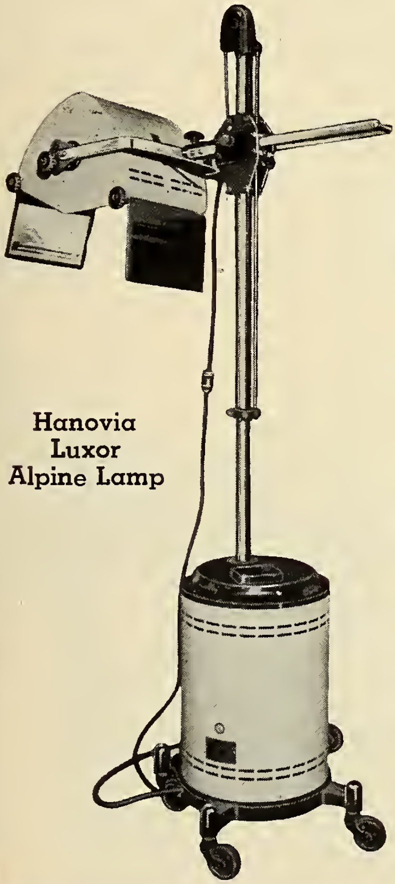

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(Continued from Page 626)

Falls, and expect to begin to practice in the near future. Dr. Cairns, now that the war emergency is over, has discontinued his practice at Wabasso.

* * *

Dr. Stephen J. Kruzich, on terminal leave from the Army where he served with the rank of major for over three years, has opened offices at Sleepy Eye. Dr. Kruzich, a graduate of Rush Medical College, Chicago, was practicing in Aberdeen, South Dakota, prior to entering the armed forces.

* * *

Because of his recent illness, which Dr. Herbert B. Aitkins refuses to permit to terminate his practice of fifty years at Le Center, the doctor has moved his offices from the First National Bank Building to his home, so as to be able to take things a bit easier. Dr. Aitkin has occupied the same offices since 1903.

* * *

Dr. J. Arnold Bergen, Mayo Clinic, attended the Centennial Anniversary meeting of the Milwaukee Medical Society, in Milwaukee on May 1. A feature of the celebration was a testimonial dinner in honor of the twenty-fifth anniversary of Dr. Eben J. Carey as Dean of Marquette University.

* * *

Dr. Edward A. Meyerding, Saint Paul, executive secretary of the Minnesota Public Health Association, presented 103 schools in Renville, Yellow Medicine, Chippewa and Lac Qui Parle counties with tuberculosis control certificates. Dr. Lewis Jordan, superintendent of Riverside Sanatorium at Granite Falls, has been in charge of the tuberculosis program in these counties since 1930.

* * *

Dr. Charles L. Steinberg, who served as Commander in the Navy, having been stationed at the Treasure Island Naval Hospital in San Francisco and Base Hospital No. 8, Pearl Harbor, resumed the practice of pediatrics several months ago, with offices at 1118 Lowry Medical Arts Building, Saint Paul.

* * *

Dr. George Eusterman, of the Mayo Clinic, was guest speaker at the meeting of the Nebraska State Medical Association held at Lincoln in May. The subject of his address was "Acute Hepatitis and its Sequalae; Notes on Diagnosis and Treatment." Dr. Eusterman also took part in a symposium on pre-operative and postoperative medical problems in the surgical patient.

* * *

Dr. A. B. Nietfeld, who since his discharge from military service has been doing postgraduate work in obstetrics and diseases of the eye in Minneapolis, has been appointed a member of the staff of the Warren Clinic at Warren, according to an announcement made by Dr. Carle H. Holmstrom, director of the Clinic.

* * *

Dr. Arthur George Davis, chief orthopedic surgeon at the Shriners' Hospital for Crippled Children in Philadelphia, was the guest speaker at the final meeting of the

(Continued on Page 630)

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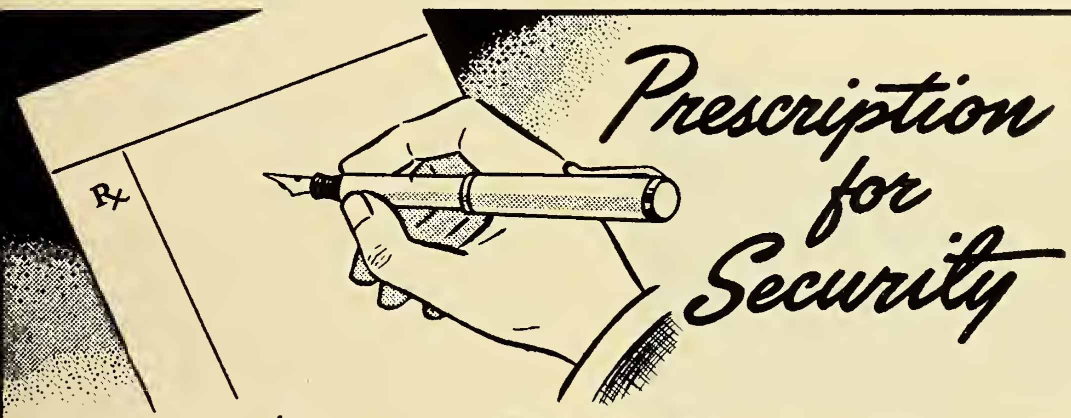

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(Continued from Page 628)

Hennepin County Medical Society for the season on May 6. Dr. Davis, one of the lecturers in the postgraduate course at the University of Minnesota, spoke on "Injuries of the Cervical Spine."

* * *

Dr. Kenneth R. Larson, recently discharged from military service, has reopened his offices in the Lowry Medical Arts Building in Saint Paul. Dr. Larson was surgeon for the 18th Naval Construction Battalion and served for eighteen months in the Pacific Area. He is a graduate of Hamline and the University of Minnesota Medical School.

* * *

In appreciation of his services in the interests of Gustavus Adolphus College, St. Peter, Dr. David L. Tilderquist of Duluth was presented with a plaque by the college Alumni Association at an honorary luncheon in Minneapolis. An 1894 graduate, Dr. Tilderquist established several science scholarships at the college for premedical students.

* * *

Dr. Bernard E. O'Reilley has opened offices at 642 Lowry Medical Arts Building, Saint Paul, following discharge from naval service. He had a commission as Lieutenant Commander and was stationed at Bainbridge Naval Training Station in Maryland, the Naval Hospital at Portsmouth, Virginia, and at the U.S.S. Rocky Mountain Naval Hospital in Tennessee.

Dr. David A. Burlingame, who was discharged from the army, has become associated with Dr. M. B. Hanson at 435 Lowry Medical Arts Building, Saint Paul, in the practice of radiology. Dr. Burlingame, with the rank of Lieutenant Colonel, was stationed at the San Angelo Army Air Base at San Angelo, Texas, and later went overseas with the 172nd General Hospital.

* * *

Thirteen members of the Southwestern Minnesota Medical Association who recently returned from military service were guests of honor at the meeting on May 13. Included among the doctors singled out for honor were Drs. Walter R. Schmidt, Worthington; Albert I. Balmer and Stanley Chunn, Pipestone; Victor Pancratz, Mountain Lake; Walter B. Wells,, Jackson; Ludolf J. Hoyer, Windom, and Gerrit Beckering, Edgerton.

* * *

Dr. James Jennings Warner, Perham, has been joined in practice by Dr. Tobe S. Eberley, formerly of Anoka. Dr. Eberley is a graduate of the University of Minnesota Medical School. He was inducted into the Army in 1941 and served as flight surgeon with the Air Force in England and with the Ninth Air Force on the Continent. He arrived in France five days after the invasion of Normandy.

* * *

Dr. Charles E. Rea has returned after nearly three years of service at Oak Ridge, Tennessee, where as Lieutenant Colonel he served as Commanding Officer of

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the hospital established to care for the personnel attached to the atomic bomb project in that locality. He has reopened his office at 917 Lowry Medical Arts Building, Saint Paul, where he will limit his practice to surgery.

* * *

The tenth anniversary of the founding of the Saint Paul Surgical Society was celebrated on April 26 with a formal dinner at the Hotel Saint Paul. The speaker was Dr. Robert L. Sanders, director of the Sanders Clinic, Memphis, Tennessee, who talked on "Surgical Complications of the Duodenal Ulcer." Dr. Harry B. Zimmermann was the first president of the Society and Dr. O. W. Holcomb fills the office at present. Dr. William F. Hartfiel is secretary.

* * *

The Hennepin County Medical Society admitted eight new members and two transfers at the final meeting of the season on May 6. Those elected to membership are: Dr. H. Francis Forsyth, Dr. Nathan K. Jensen, Dr. Herman K. Koschnitzke, Dr. John W. Olson, Dr. John A. Seaberg, Dr. Baxter A. Smith, Dr. Leonard A. Titrud and Dr. Robert F. Werner. The transfers are Dr. Bourne Jerome and Dr. John W. Johnson.

* * *

As soon as he can secure suitable offices, Dr. Ralph Armstrong will open a medical practice in Winnebago. Dr. Armstrong, whose home town is Mahnomen, graduated from the University of Minnesota, and following the completion of his internship enlisted in the Army. He was stationed in the South Pacific Islands for three years, then returned to this country and was assigned to the Army Aviation Hospital at St. Petersburg, Florida, where he remained until his recent return to Minneapolis.

* * *

The Ramsey County Medical Society gave a dinner recently at the Saint Paul Athletic Club in honor of the members who have returned from military service. The principal speaker was Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, who discussed "Trends Toward Medical Specialization."

An address of welcome was made by Dr. Harry B. Zimmermann, who presided at the banquet.

* * *

Dr. William T. Peyton, Director of the Division of Neurosurgery at the University of Minnesota, was guest speaker at the spring meeting and banquet of the Red River Valley Medical Society held in the Red and Gold Room at the Hotel Crookston in Crookston. Dr. Peyton discussed "Herniated Intervertebral Discs." Thirty-five members of the Society, accompanied by their wives, attended.

At the conclusion of the banquet the Ladies Auxiliary held their annual meeting with election of officers.

* * *

Dr. Charles Albert Haberle, of Minneapolis, who received his medical degree from the University of Minnesota in March, will leave shortly for military duty. Dr. Haberly was sworn into the Army as a first lieutenant on June 16, 1945, after completing his internship at

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Glen Lake Sanitarium. He received his degree of Bachelor of Science in December, 1943, and was graduated from the School of Medicine on June 15, 1945. He is president of Phi Beta Pi medical fraternity.

* * *

Speaking at a luncheon meeting of the Junior Association of Commerce in Minneapolis, Dr. Vernon L. Lindberg, a former major in the Army Medical Corps who was assigned to duty at the Tennessee Atom Bomb Project for two years, described the safety precautions taken there as the most elaborate in the world. Although more than 85,000 persons were engaged on the project, Dr. Lindberg said the accident rate was kept to normal.

* * *

Dr. Alvin Erickson, formerly in practice in Ivanhoe, has been admitted to partnership in the Long Prairie Clinic by Drs. Arthur H. Borgerson and Maurice E. Moseby.

Dr. Erickson is a graduate of the University of Minnesota, where he took his doctor's degree in 1935. He entered the Army in January, 1941, and was on duty in the Southwest Pacific for fifteen months. At the time of his discharge last February he was a lieutenant colonel.

* * *

A Certificate of Merit has been awarded to Dr. Harold S. Diehl, Dean of the University of Minnesota Medical School, by President Truman in recognition of Dr. Diehl's wartime service.

Dr. Diehl was a member of the government's Procurement and Assignment Service which was charged with the responsibility of obtaining and assigning doctors, dentists, nurses, veterinarians and sanitary specialists for the armed forces.

* * *

Dr. C. H. Hildebrand, formerly of Omaha, is now associated in practice with Dr. William B. Richards at St. Cloud. Following his graduation from the University of Nebraska College of Medicine in 1942, Dr. Hildebrand served a year's internship at Jackson Memorial Hospital in Miami, Florida. He enlisted in the Army and his first assignment was at the Station Hospital at Camp Shelby, Mississippi, where he was Chief of Septic Surgery. From there he was sent overseas with the Fourth Auxiliary Surgical Group in the ETO.

* * *

Major Donald L. Paulson, Chief of the Thoracic Surgical Section, Brooks General Hospital, Fort Sam Houston, was recently awarded the Army Commendation Ribbon for his skill and devotion to duty. A graduate of the University of Minnesota Medical School in 1935, Dr. Paulson completed his postgraduate studies in surgery at the Mayo Foundation, where he received his Ph.D. in 1942. Dr. Paulson will resume civilian practice in Dallas upon separation from service in the near future.

* * *

Lt. Col. Conrad J. Holmberg, Minneapolis, has returned after nearly four years in service and has opened an office at 527 Medical Arts Building. He joined the

26th General Hospital and later was transferred to the 31st Station Hospital, Fort Custer, Michigan and Fort Ord, California, prior to overseas service at New Caledonia where he was Chief of Surgery in eye, ear, nose and throat diseases. The 31st Station Hospital was later stationed at Okinawa and Seoul, Korea, where Lt. Col. Holmberg was Hospital Commander.

* * *

Dr. John J. Garthe, who before entering military service was associated in practice with Dr. J. Anthony Malerich in West Saint Paul, has rejoined Dr. Malerich in a partnership.

A lieutenant colonel in the Army Medical Corps, Dr. Garthe was Chief of Medicine at an Army hospital in Detroit, Michigan, for over three years, and Chief of a Medical Section in a general hospital in the Pacific Theatre for eighteen months. He is a graduate of Loyola College and formerly resided in Chicago and Evanston.

* * *

Dr. Earl V. Wetzel, recently discharged from military service, has opened offices for the practice of medicine and surgery in St. Cloud. A lieutenant colonel in the Army, Dr. Wetzel was flight surgeon with the Fifth Air Force on the West Coast and in the Southwest Pacific for four years. He is a native of Little Falls and took his medical degree at the University of Minnesota in 1940. He interned at St. Mary's Hospital in Minneapolis and had a surgical residency there later. Since his discharge from the Army he has been serving on the staff at St. Mary's.

That the prepaid health insurance plan now under consideration by the State Medical Association is the soundest plan yet presented, was the opinion voiced by Dr. Myron Weaver, Assistant Dean of the University of Minnesota Medical School, in an address at a meeting of the health division at the Minnesota Welfare Conference held at the Lowry Hotel in Saint Paul.

At the same meeting Dr. Viktor O. Wilson, of the Division of Child Hygiene, State Department of Health, reported plans for the state hospital and public health survey.

* * *

Announcement has been made of the affiliation in practice of Dr. John E. Eckdale and Dr. Burton C. Ford at Marshall. Dr. Eckdale had been practicing for two years at Lyle when he was inducted into the armed forces. He served as flight surgeon in the Army Air Force from August, 1942, until February 7, 1946, when he was placed on the inactive list with the rank of captain. He was overseas for ten months and was in action on Okinawa. He is a graduate of the University of Minnesota and served his internship at the Milwaukee County General Hospital.

* * *

Four young physicians from Rochester have reported for duty in the Army at the Medical Department Schools, Brooke Army Medical Center, Fort Sam Houston, Texas. They are: First Lieutenants George T. Joyce, Robert U. Moersch and Edward D. Henderson, all fellows-on-leave from the Mayo Foundation, and Kenneth L. Bauman. Lieutenant Moersch is a graduate

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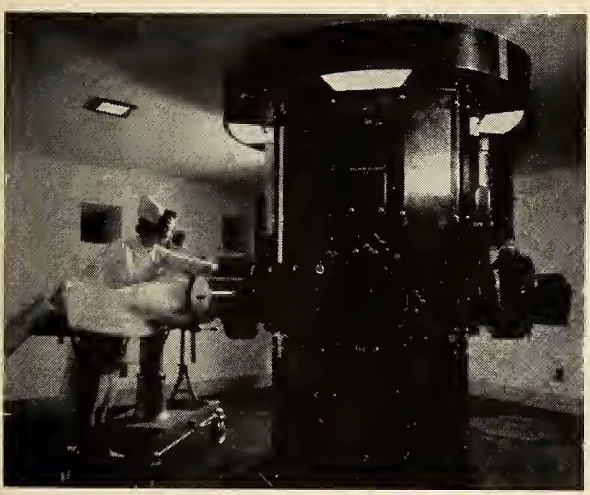

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GYNECOLOGY—Two-week Intensive Course, starting October 21. One-week Personal Course in Vaginal Approach to Pelvic Surgery, starting September 16.

OBSTETRICS—Two-week Intensive Course, starting October 7.

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of the University of Pennsylvania Medical School. The other three graduated from the University of Minnesota.

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* * *

Dr. Donald S. Branham, Albert Lea, returned April 30, 1946, after five years' service in the Army, to his practice in the offices of Drs. Branham, Whitson and Person.

Dr. Branham was in active duty in the Aleutian Islands as Chief of Surgery for a five-hundred-bed station hospital at the time of the attacks on Dutch Harbor and Midway Island. After twenty-six months overseas, Dr. Branham was stationed in San Francisco, on the surgical staff at the Veterans Administration Center. Just prior to his release from service he was promoted to the rank of colonel.

* * *

Speaking at a symposium on plastic surgery at a continuation course at the University of Minnesota, Dr. Samuel G. Balkin, consultant to the Veterans Administration, stated that techniques developed during the war have made it possible to complete plastic surgery operations in half the time formerly required. Dr. Balkin, who was in service for fifty-two months, emphasized that these improved techniques are primarily concerned with reconstructive, rather than cosmetic surgery.

Dr. N. Logan Levin, Saint Paul, Clinical Associate Professor of Surgery at the University, and Dr. Fred A. Havens, Sr., Associate Professor, Mayo Foundation, Rochester, also took part in the symposium.

* * *

With her retirement on July 1, Dr. Orianna McDaniel will have completed fifty years of service in the Minnesota Department of Health. Dr. McDaniel came to Minnesota in 1894, following her graduation from the University of Michigan Medical School. She interned at Northwestern Hospital in Minneapolis in 1895 and a year later was appointed bacteriologist at the newly established laboratory of the State Health Department under Dr. Charles N. Hewitt, at a salary of fifteen dollars a month. In 1907 Dr. McDaniel was made head of the Pasteur Institute. Ten years later she was promoted to assistant director of the Division of Preventable Disease, and in 1921 was made director, a position she has held ever since.

* * *

Dr. Robert R. Remsberg, formerly of Kansas City, Kansas, has been appointed an assistant in the office of Dr. Walter H. Valentine at Tracy.

Dr. Remsberg graduated from the University of Kansas Medical School in 1942. Prior to entering medical school he had been a science instructor for several years. On conclusion of his internship at St. Margaret's Hospital in Kansas City, an affiliate of the University, he entered the Army and was sent to the Carlisle Medical Field Service School to prepare for active duty. He served aboard an Army transport in the Atlantic for twenty-seven months, and his ship was among the first at the American beachhead in the invasion of Normandy.

While in Cleveland, Ohio, to assist with the examinations of the American Board of Pediatrics, Dr. Charles A. Aldrich, of the Mayo Clinic, who is president of the Board, also participated in a refresher course in pediatrics and obstetrics, where he presented his "Observations on Normal Behavior in Infants." The course was sponsored by the Cleveland Academy of Medicine, Western Reserve School of Medicine, and the Cleveland Division of Health, with the co-operation of the Anti-tuberculosis League. Later in the same week, Dr. Aldrich attended the meeting of the American Pediatric Association held at Skytop, Pennsylvania, where he delivered his presidential address entitled, "The War Comes Home to Pediatrics."

* * *

Dr. Waltman Walters of Rochester has been commended by the Secretary of the Navy "For outstanding performance of duty as Chief of the Surgical Service and as Surgeon in Charge of the Dependents Unit, United States Naval Hospital, Philadelphia, Pennsylvania, from December 28, 1944, to October 23, 1945. . . . Captain Walters aided materially in organizing and administering a high type of resident training for medical officers in the Philadelphia Naval Hospital, which achieved the recognition and unqualified approval of the American Board for certifying specialists. He maintained effective liasion between the surgical service of the Naval Hospital and the teaching institutions and surgical groups of Philadelphia and rendered counsel and guidance to the Rehabilitation Board while serving as a member of that activity. His professional skill and tireless efforts on behalf of war casualties reflect the highest credit upon himself and the United States Naval Service."

The citation carries with it the right to wear the commendation ribbon.

* * *

The Hennepin County Medical Society reports the return to practice of the following members:

Dr. William S. Eisenstadt has resumed his allergy practice in the Medical Arts Building. A major in the Army, Dr. Eisenstadt entered service in 1942. He served in a hospital in New Guinea for a year and was later Chief of the Allergy Section at the hospital at Fort Warren, Cheyenne, Wyoming.

Dr. Harold T. Gustafson, after two and a half years as a lieutenant commander at a Naval hospital at Barstow, California, is again in his offices in the La Salle Building.

Dr. Charles H. McKenzie has reopened his offices in the Medical Arts Building for the practice of obstetrics and gynecology. A commander in the Navy, he was stationed at a Naval hospital at Bremerton, Washington. More recently he was on duty in Japanese waters.

Dr. Asher A. White has returned to his practice of internal medicine at 1009 Nicollet Avenue. Dr. White entered the Army in 1943 and with the rank of major served in hospitals at the Atomic Bomb Project in Washington and Tennessee.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

The Management of Fractures, Dislocations and Sprains. 4th Edition. John Albert Key, B.S., M.D., Clinical Professor of Orthopedic Surgery, Washington University School of Medicine, Associate Surgeon of Barnes, Children's and Jewish Hospitals; and H. Earle Conwell, M.D., F.A.C.S., Orthopedic Surgeon to Tennessee Coal, Iron and Railroad Company and American Cast Iron Pipe Company, Chairman of Committee on Fractures and Traumatic Surgery of the American Academy of Orthopedic Surgeons, etc., etc. 1322 pages. Illus. Price, $12.50, cloth. St. Louis: C. V. Mosby Co., 1946.

Corky the Killer—A Story of Syphilis. Harry A. Wilmer, B.S., M.S., M.B., M.D., Ph.D. in Path. Introduction by Paul A. O'Leary, M.D., Head, Section on Dermatology and Syphilology, Mayo Clinic; Professor of Dermatology and Syphilology, Mayo Foundation, University of Minnesota. Forewords by Joseph Earle Moore, M.D., Associate Professor of Medicine, John Hopkins University, and Kendall Emerson, M.D., Managing Director, National Tuberculosis Association. 67 pages. Illus. Price, $1.00, cloth. New York: American Social Hygiene Association, 1945.

Physiotherapy (Vocational and Professional Monographs). Thomas Francis Hennessey, M.D. Dean and Director, Massachusetts School of Physiotherapy, Boston. 23 pages. Price 75c, paper cover. Boston: Bellman Publishing Co., 1946.

The Venous Pulse and Its Graphic Recording. Franz M. Groedel, M.D. Attending Cardiologist, Beth David Hospital, Cardiologist, St. Anthony's Hospital, Consulting Cardiologist, Einhorn Department, Lenox Hill Hospital, New York. 223 pages. Illus. Price, $5.50, cloth. New York: Brooklyn Medical Press, 1946.

Shock Treatments and Other Somatic Procedures in Psychiatry. Lothar B. Kalinowsky, M.D. Research Associate in Psychiatry, College of Physicians Surgeons, Columbia University, and New York State Psychiatric Institute and Hospital, Assistant Neurologist, Neurological Institute of New York; Paul H. Hoch, M.D., Assistant Clinical Psychiatrist, New York State Psychiatric Institute and Hospital, Instructor in Psychiatry, College of Physicians and Surgeons, Columbia University. Foreward by Nolan D. C. Lewis, M.D., Professor of Psychiatry, College of Physicians and Surgeons, Columbia University, Director of New York State Psychiatric Institute and Hospital. 294 pages. Illus. Price, $4.50, cloth. New York: Grune & Stratton, 1946.

Cornell Conferences on Therapy. Volume 1. Edited by Harry Gold, M.D., Managing Editor, and David P. Barr, M.D., Eugene F. DuBois, M.D., McKeen Cattell, M.D., and Charles H. Wheeler, M.D. 322 pages. Price, $3.25, cloth. New York: The Macmillan Co., 1946.

Synopsis of Pathology. W. A. D. Anderson, M.A., M.D., F.A.C.P. Professor of Pathology and Bacteriology, Marquette University School of Medicine, Pathologist, St. Joseph's Hospital, Milwaukee, formerly Associate Professor of Pathology, St. Louis University School of Medicine. 741 pages. Illus. Price, $6.50, semi-flexible binding. St. Louis: C. V. Mosby Co., 1946.

Synopsis of Physiology. Rolland J. Main, Ph.D., Professor of Physiology, Medical College of Virginia, Richmond. 341 pages. Illus. Price, $3.50, semi-flexible binding. St. Louis: C. V. Mosby Co., 1946.

Memorias Do Instituto Butantan, 1944-1945. Tomo xviii. 258 pages. Illus. Sao Paulo: Revista Dos Tribunais, Ltds., 1945.

Modern Management in Clinical Medicine. F. Kenneth Albrecht, M.D., S.A. Surgeon, U. S. Public Health Service, Kansas State Tuberculosis Consultant; formerly Clinical Director, U. S. Marine Hospital, Baltimore, Md. 1238 pages. Illus. Price, $10.00, cloth. Baltimore: Williams & Wilkins Co., 1946.

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES. Paul Titus, M.D. Third Edition. 1,000 pages. Illus. St. Louis: C. V. Mosby Company, 1945.

The thoroughly devised third edtitions of Titus, "The Management of Obstetric Difficulties" is especially timely. Being, as in its previous editions, a handy helper to one doing obstetrics, this new book should find widespread use by the returning service physician to help him through complications and difficulties. Although considerable material has been added, making the book useful to students, residents, and others as a textbook, he has, as stated in the preface to the second edition, still primarily emphasized the management of minor and major obstetric emergencies.

The simplification of the pelviography discussion is gratifying. The chapter on cesarean section is complete and practical, and cautions physicians regarding pitfalls wherein the occasional operator may encounter disaster. The treatment of the subject of sterility, although sterility is not an obstetric emergency *per se,* is logical and instructive; inclusion of this subject is favored because of its importance. The frequently discussed complications—for instance, placenta previa, abortion, toxemias of pregnancy—are well written with regard to therapy, whereas with regard to etiology and physiology, the discussion (especially of toxemias) might be shortened. The managing of the minor nuisance complaints of pregnant women shows the wisdom of this venerable physician.

The script is well composed and carefully edited, the author having had the excellent help of the Division of Publications, Bureau of Medicine and Surgery, United States Navy.

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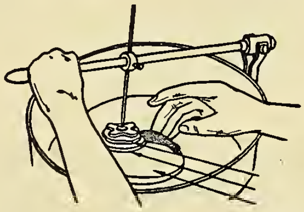

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 **July, 1946** **No. 7**

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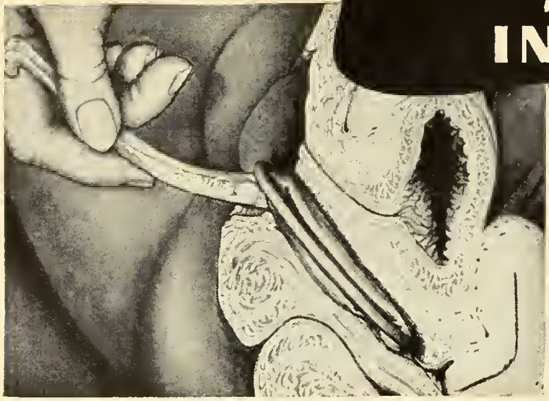

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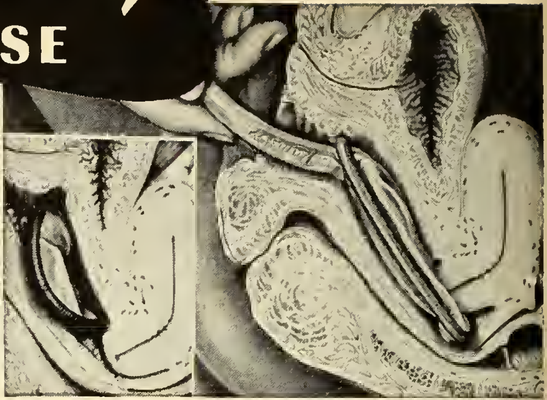

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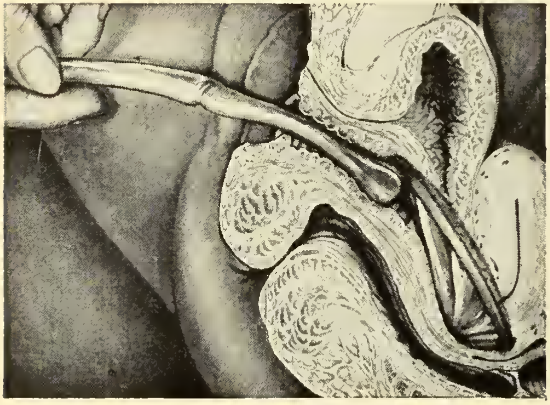

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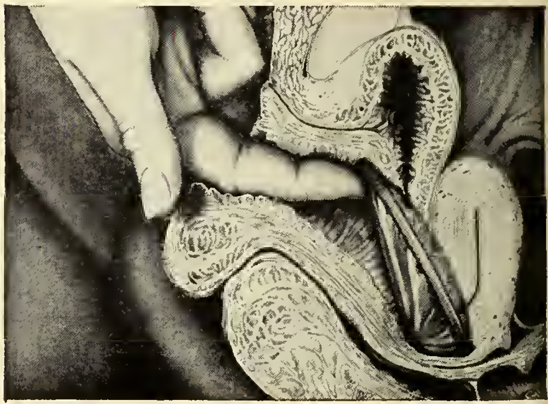

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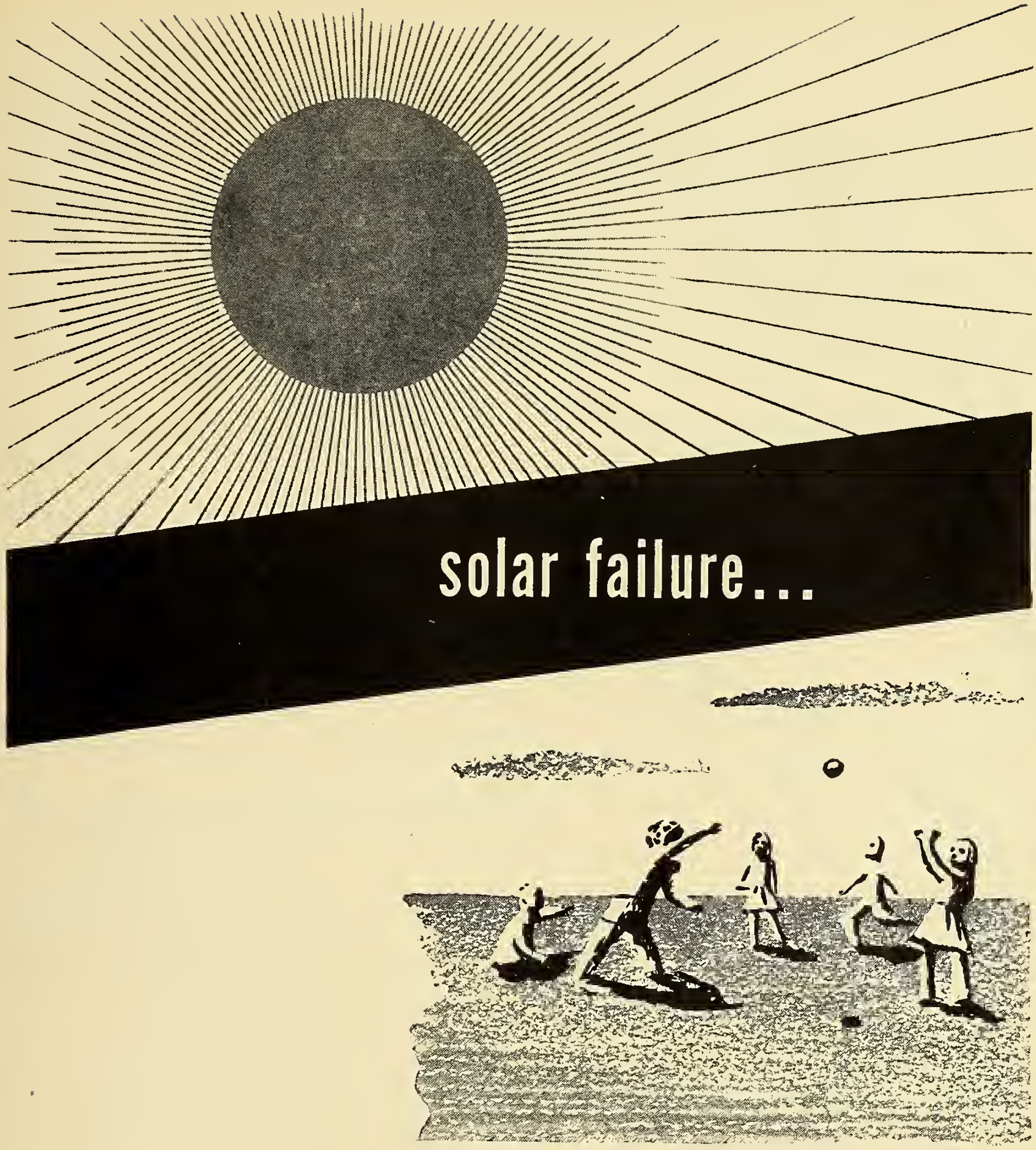
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1. Florida Health Notes 37, May, 1945.
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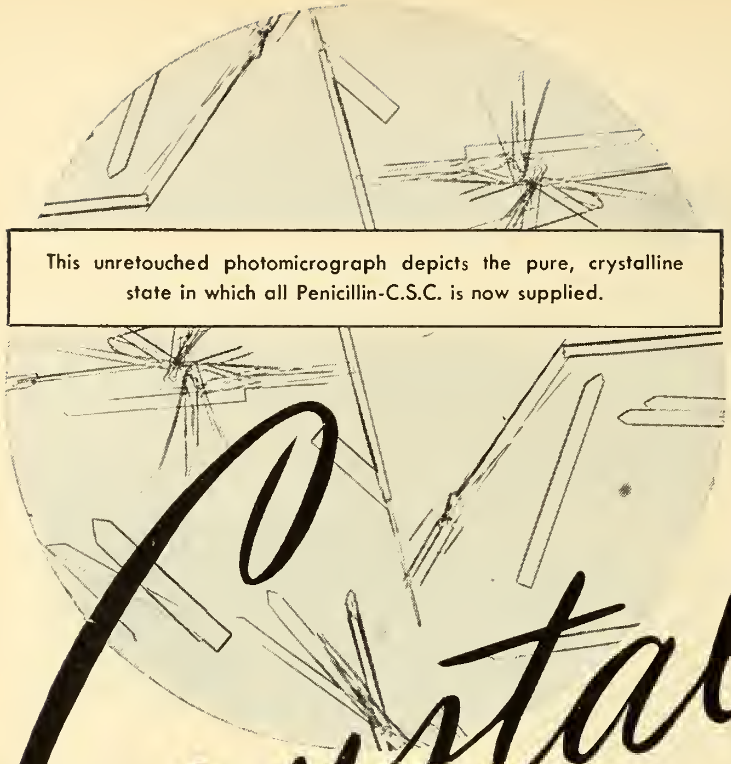

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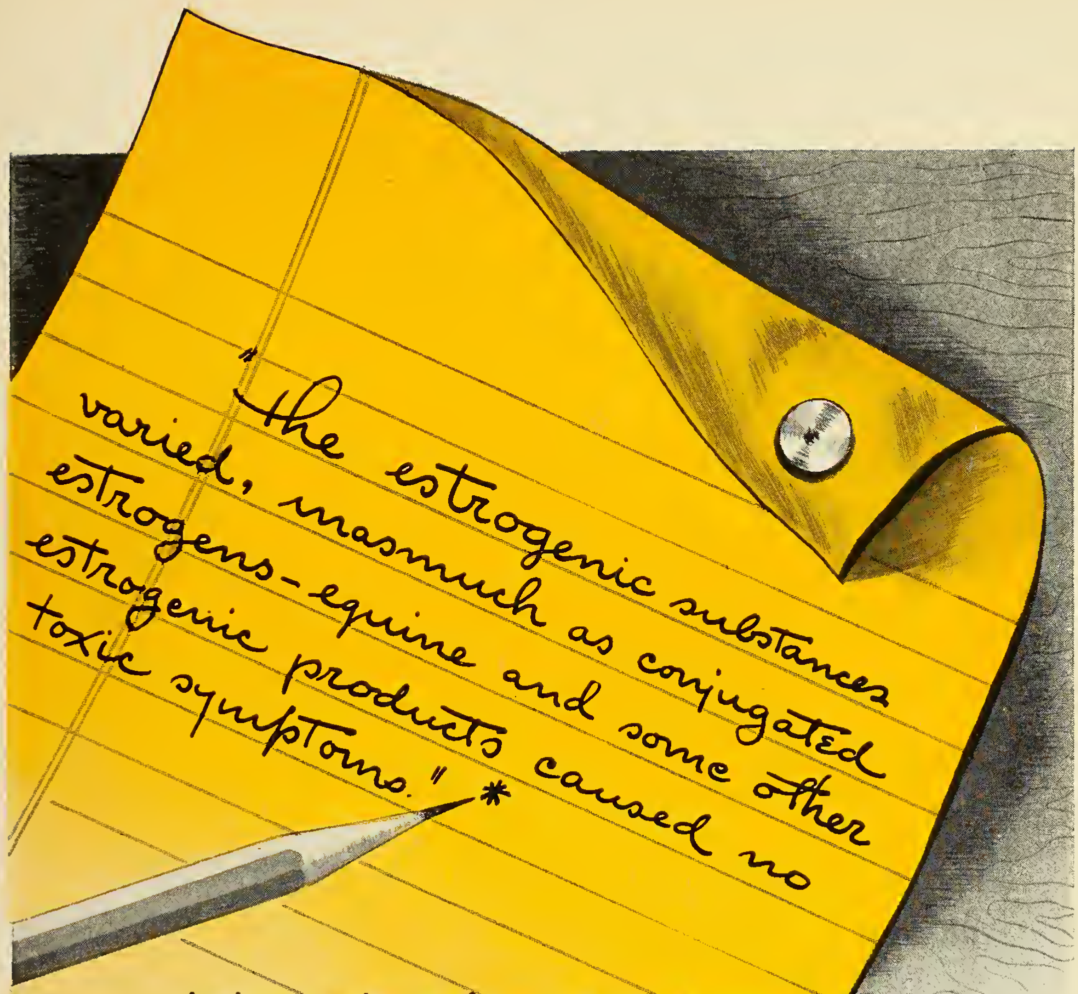
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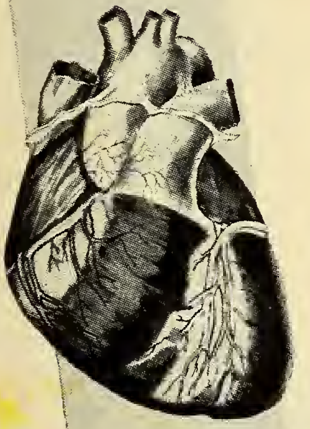

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[1] Gold, H.; Cattell, M.; Modell, W.; Kwit, N. T.; Kramer, M. L., and Zahm, W.: J. Pharmacol. & Exper. Therap. *82*:187 (Oct.) 1944.
[2] Gold, H.: Connecticut M. J. 9:193 (Mar.) 1945.
[3] Levine, S. A.: Clinical Heart Disease, ed. 3, Philadelphia, Pa., W. B. Saunders Company, 1945, p. 273.

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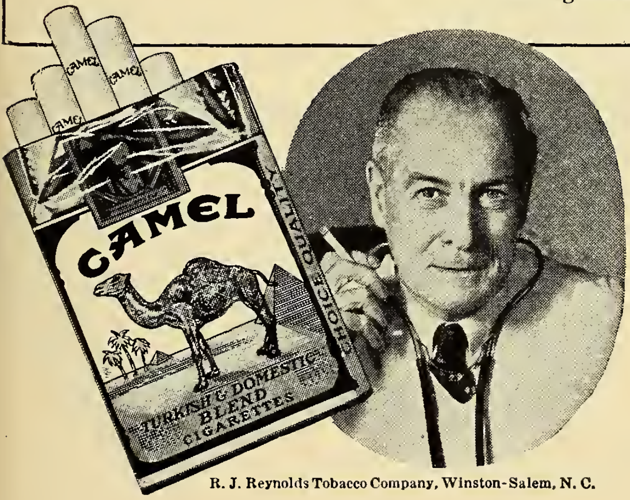

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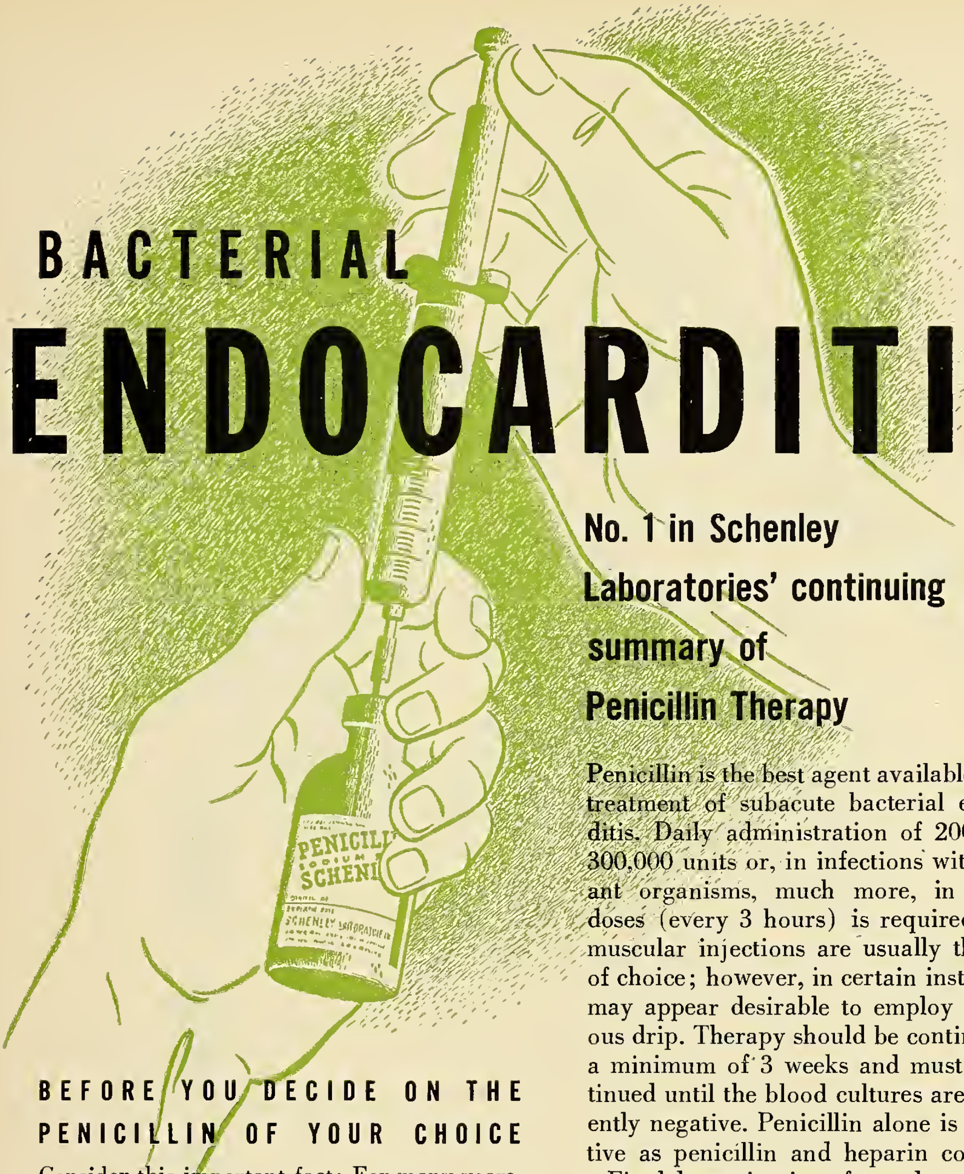

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DAWSON, M. H., AND HUNTER, T. H.: *The Treatment of Subacute Bacterial Endocarditis with Penicillin: Results in Twenty Cases, J.A.M.A. 127:129 (Jan. 20) 1945*... FAVOUR, C. B.; JANEWAY, C. A.; GIBSON, J. G., II, AND LEVINE, S. A.: *Progress in the Treatment of Subacute Bacterial Endocarditis, New England J. Med. 234:71 (Jan. 17) 1946.*

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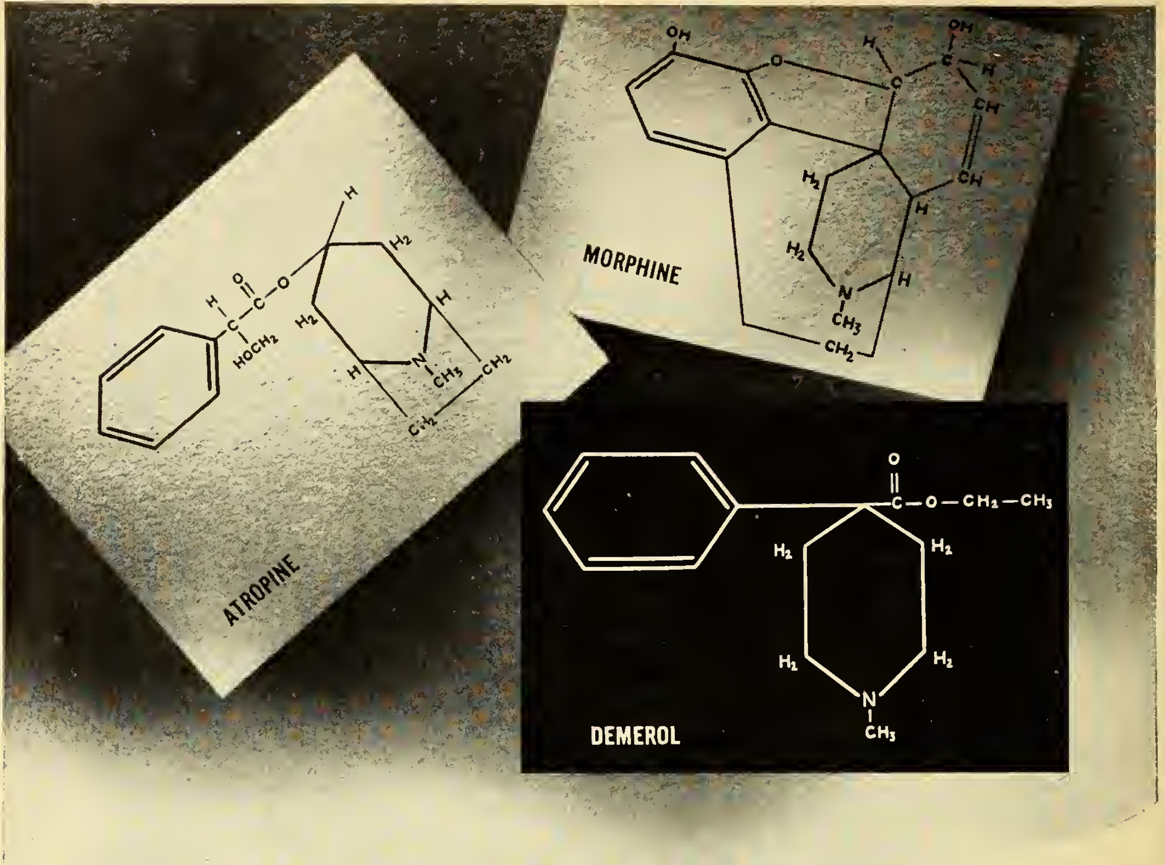

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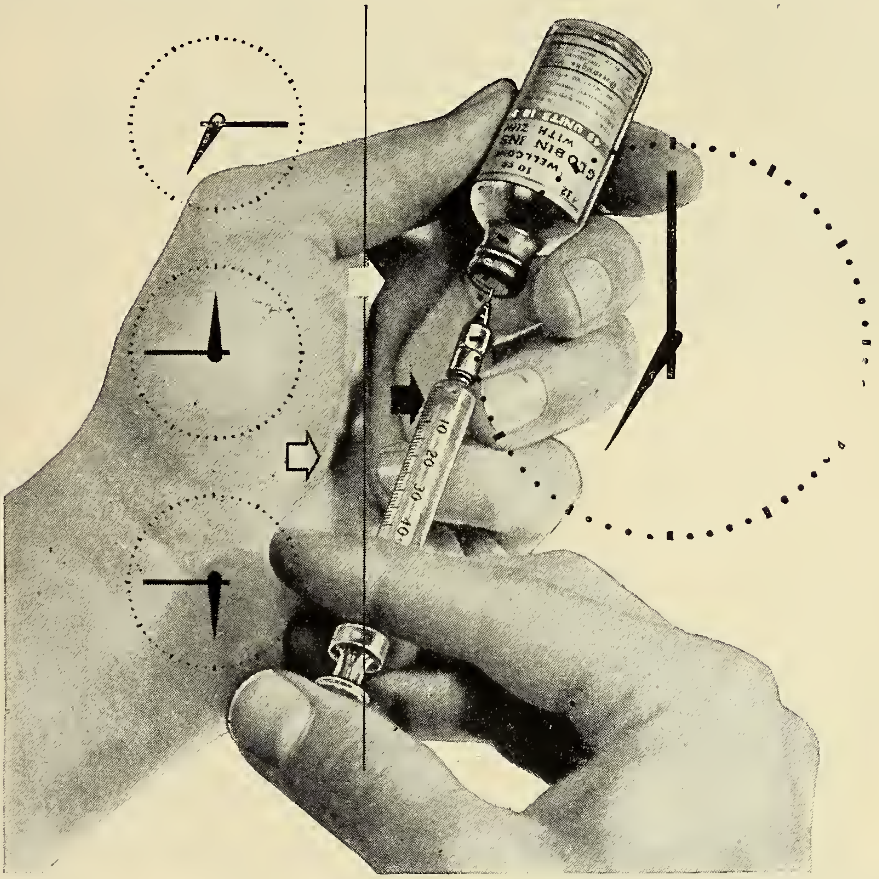

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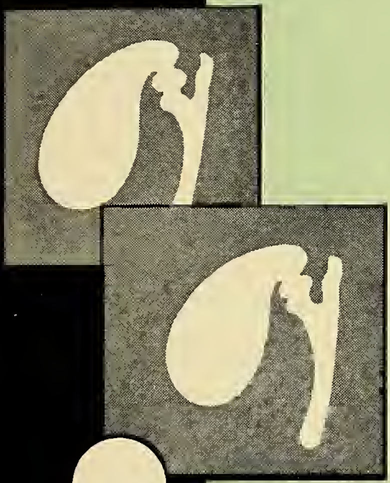

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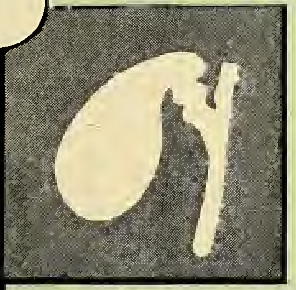

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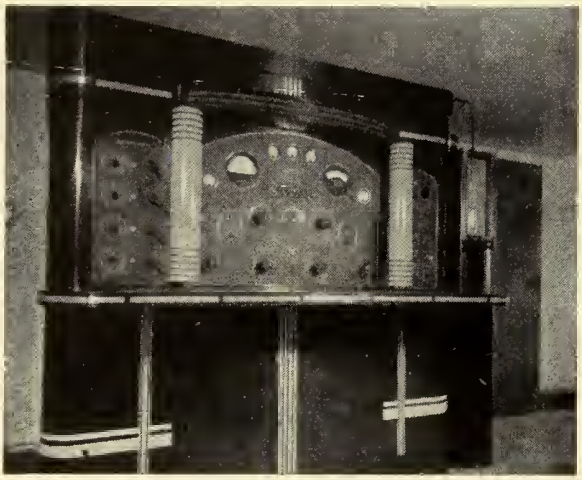

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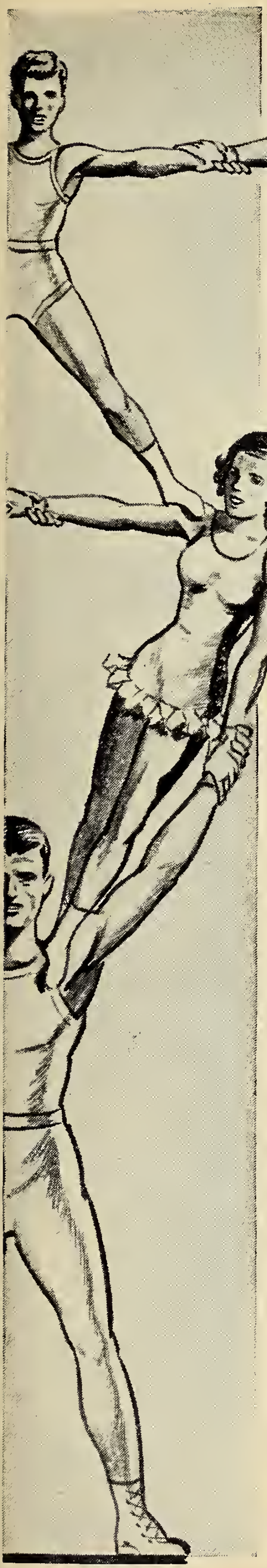

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 July, 1946 No. 7

THE SOCIOLOGICAL PATHOLOGY OF MEDICINE

EDWIN J. SIMONS, M.D.
Swanville, Minnesota

IT is a far cry from the horse and buggy days of medicine to the exact diagnoses and specific treatment of today. The phenomenal progress of scientific medicine can well stir the hearts of the profession with pride, and the minds of the American people with gratitude. Yet, through the transition from the old to the new, changes have occurred upon which the profession might well meditate. It might even be well to consider what good in the old order has been lost, and what undesirable features exist in the new.

Even though it may be heresy to impugn medicine by admitting it has faults, most of its imperfections are of a social rather than a scientific nature. Harried with the intensity of practice, physicians have been too pre-occupied with its scientific aspects to realize the influence of sociological developments. And so, insidiously yet steadily, the sociological nature of medical practice has changed. The objective of this discussion is to prescribe some of the changes and trends in medical practice and to suggest improvements for some of medicine's sociological defects.

Etiology

At the turn of the present century, diphtheria occurred in vast pandemics. Typhoid and scarlet fever had widespread prevalence. Smallpox still decimated the population in recurrent epidemics. For these and other infectious diseases, the family doctor spent hours supervising what symptomatic treatment seemed advisable. As the years passed, diphtheria immunization was added to smallpox vaccination. In time, too, through the ceaseless efforts of immunologists has come prevention of typhoid and scarlet fever and other infectious diseases. Vaccination and immunization campaigns have reduced many of the infectious diseases to relatively infrequent occurrence. Preventive medicine, though scarcely known a half century ago, has changed the physician's experience with infectious diseases to one of prevention rather than that of "watchful waiting" and symptomatic treatment.

Accurate diagnosis of many diseases closely approaches an exact science today, whereas it often depended solely upon nicety of judgment and clinical acumen in the not distant past. When the general practitioner was called to see a jaundiced patient some years ago, gall-bladder disease and catarrhal jaundice concerned him most. The final determination of the diagnosis resulted from repeated observations and the clinical course. Now, catarrhal jaundice has become infectious hepatitis and a long list of both surgical and medical diseases of the liver requires consideration. For their accurate diagnosis, a multitude of the most intricate laboratory tests[5] must be done. In fact, at times only needle puncture of the liver for microscopic examination of tissue will produce the correct diagnosis. So, at present, proper diagnosis of many diseases, as exemplified by those of the liver, is no longer within the realm of the general practitioner's facilities.

Correct treatment of different diseases also portrays a change from the old order. Classic references depict the doctor of the early part of this century almost constantly at the bedside of

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Presidential address presented at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 21, 1946.

the pneumonia patient. Even the textbooks of that period advocate tepid sponge baths, hot applications to the chest and stimulants through the crisis. Now, with the typing of the different strains of pneumococci has come serum for each strain. Even more recently, the sulfonamides and penicillin have been added as effective anti-pneumonia agents. So now, proper treatment means accurate typing of the germs in the sputum, blood studies, and laboratory tests to guide the usage of the different remedial agents. Now, each patient must be in a hospital where such tests can be done and the proper curative agents given as required. The attainments of science in correct treatment of various diseases have revised the old symptomatic treatment in the home.

Among the most remarkable advances are those in surgery and anesthesia. It is not beyond the memory of many that "typhlitis" or inflammation of the bowel found one of the family pouring chloroform while the family doctor removed the appendix with the patient lying on the kitchen table. From that to the miraculous attainments of surgeons and anesthetists today is an intriguing story. With cyclopropane and other new anesthetic agents, patients are safely kept under anesthesia for eight to ten hours. Today, the whole stomach, part of the liver, the pancreas, or an entire lung can be removed with impunity. But these feats have been accomplished only by integration of the knowledge and ability of a corps of the best trained specialists. Again, here, medicine has passed from the sphere of a single man, the general practitioner.

In the present discussion, these changes are noteworthy principally from a sociological perspective. As the science of medicine has developed, accurate diagnosis and proper treatment have changed the role of the general practitioner and have placed upon him an increased responsibility in diverse medical fields. For a majority of the people, he still remains the first and often the only solution to their medical problems. Yet as medicine has passed one milestone after another of scientific progress, he has required some supplementation of his services.

Through this same period has come a decided growth of specialization. Re-organization of the Johns Hopkins Medical School faculty[4] in 1889-90 began to focus attention on postgraduate medical training. A second impetus toward specialization came with the Flexner report[1] of 1910. As a result of it, more than of any other single factor, the diploma mills and an easy, rapid medical education fell into disrepute. Internships, residencies and fellowships became an integral part of medical education. Added momentum toward limitation of practice and specialization also came from the first World War. Different specialties in medicine had, even then, developed to the point where medical book publishers[10] revised their policies to cater to the ever-increasing army of specialists. So marked has grown this trend that at present, specialization involves one of every three physicians.

With the growth of specialization there has come a migration of doctors from rural areas and a concentration of them in the cities. This is an inevitable result, for the practice of a specialty is dependent upon large reservoirs of potential patients. As the ranks of the specialists have increased, the number of rural and general practitioners has decreased. In this regard, a recent study[6] has shown that not only has there been a reduction in the number of rural physicians during recent years, but also rural physicians are much older than those in urban locations.

Still another factor, the hospital, has had its influence. Originally, the hospital was only for the critically ill, for the surgical case, or for obstetrical care of the wealthy. The days are not long passed, especially in rural areas, when home deliveries were the rule, and when tonsillectomies or other minor operations were done routinely in the doctor's office. Not long passed, also, are the days when the general practitioner's office was the center of diagnostic studies.

Now, the hospital[2] is the focal point of medical activities. In many of even the more remote rural areas, physicians will attend confinement cases only if they are in hospitals. It is exceptional to find a physician who removes tonsils or performs minor surgical procedures in the office. Diagnostic studies are now conducted in the hospital where x-ray and laboratory facilities, a trained technician, or even a pathologist, are constantly available. And in treatment, hospitalization has replaced home treatment in rural areas as well as in the cities.

As these changes have occurred, hospitals have employed highly trained anesthetists and have elaborate equipment for inhalation and other anesthetic agents. A corps of technicians and a completely equipped laboratory for chemical, bacterial and pathologic studies are prime requisites in hospitals today. Often a radiologist is a resident staff member. Interns, residents and fellows provide various services in addition to those of the attending physicians. And even beyond this, hospitals in some areas are admitting to their staffs only diplomates of the different specialty boards.

Thus, the sphere of the hospital has grown tremendously. Its activities have replaced and expanded those of the doctor's office. Its personnel has changed with the times to include specialists of all types. It has become the focal point of all medical activities.

Pathology

Having now reviewed some of the forces responsible for the sociological maladjustments in American medicine today, the logical next step is the actual description or definition of the disease process. This is vital for several reasons. Already, several governmental agencies, sociologists and others have discovered medicine's defects and have taken definite measures to change them. More important, though, is the realization that if medicine is to put its own house in order, its imperfections should be recognized and clearly defined.

Dominant among pathologic features is the maldistribution of physicians. The medical profession can be likened to an army composed of too many officers and too few infantrymen. Only relatively are there too many specialists, yet the scarcity of general practitioners is both real and absolute. With the increase in specialization and migration of physicians to urban areas, one sector, the rural districts, is inadequately manned by shock troops whereas the other salient, the larger cities, has a massive concentartion of officer personnel.

Before the war, there were 750 persons per physician in this country. This ratio through the war became 1:1500. In 1944, more than eighty counties had no active physician and 583 counties had more than 3,000 people per active physician.[7] These ratios are considered critical and definitely portray a maldistribution of physicians. Availability of the services of both general practitioners and specialists to people in the remote districts, as well as to those in the cities, is necessary. On such availability depends uniform as well as good medical care. Not only too few of each type of physician, family doctor and specialist, but faulty distribution of each, are the component parts of this imperfection.

Closely linked with this is the inadequacy and maldistribution of hospitals. The inadequacy of hospital beds in the larger cities is well recognized, but the lack of hospital facilities in rural sections of the country, is even more critical. In 1200 counties, 40 per cent of the total, with 15 million people, there is either no hospital or none that meets minimal hospital standards. Principally, the shortage involves beds for the acutely ill. Yet, were there more domiciliary quarters for the aged, and were there more institutions for the chronically ill and convalescent, the acute and emergency cases could easily be provided hospital care. It is noteworthy, too, that the shortage of all these types of hospital beds exists in both rural and urban districts. Thus, too, one of the inseparable components of medical care, hospital facilities, is grievously inadequate.

Moreover, the hospital situation, as it exists today, sounds the tocsin which should alert the profession to another facet of the pathology. This is the loss of control by physicians of some of the hospital features of medical practice.[2] No longer is the hospital dependent upon the practice and good will of its staff members. No longer must patients be courted and solicited. It is now a question of which patient will be admitted and which one rejected. And who answers these questions—not the physicians or the staff, but the business manager or the hospital administrator. Similarly, staff membership, which once required election by the medical staff, is now often being determined by non-medical hospital authorities. Carrying this even further, the actual care provided a patient while in the hospital, at times, is not determined by the attending physician. Some hospital regulations require that the surgeon must be a diplomate of a surgical board, the internist a medical diplomate, the obstetrician an obstetrical board diplomate. Should the surgeon's patient develop an acute otitis media and glomerulonephritis, an otologist must be called for the discharging ear and an internist for the Bright's disease. This gradual surrendering of medical control of hospital activities should be recognized as the inherent evil and ultimate danger which it is.

Another intangible, yet real, danger or disease of medical practice now is the weakening patient-physician relationship. With the greater number of patients each physician must attend and with the development of laboratory technology, history-taking and physical examination are being replaced by laboratory work. In days past, there was no alternative for a careful history, and its only diagnostic supplement was a complete physical examination. Before more specific therapy was possible or before surgery reached its present pinnacle, the slow, anxiety-laden recovery of the patient created associations between patient, relatives and the physician which were lasting ties. Thus was born an intimate relationship between patient and physician which was second to none except possibly that of parishioners and the clergy. Today, with radiological and laboratory advances, as well as the physician's press of time, the patient-physician relationship is much less personal. The machine-age, conveyor-belt, mass-production methods of medical practice today have disrupted the classical diagnostic importance of history, physical examination and laboratory tests. Also, it has failed to knit the patient-physician relationship of former years and has created a breach between the profession and the public.

Last, but not least of pathologic features, is the much debated economic one—the increased cost of medical care. At the beginning of the century, practically the entire cost of medical care was the physician's bill for personal services. The cost of drugs was a minor item, and rarely hospitalization and nursing care were significant amounts. As long ago as 1929-32, the Committee on the Costs of Medical Care[3] found the physician's services amounted to but 40 per cent of the whole bill. With the increase of hospitalization, the development of laboratory refinements in diagnosis and the advances in therapy, the physician's fee is but a minor item in the cost of medical care. Progress in scientific medicine has imposed a heavy financial burden upon the patient.

Thus, in the evolution of science, the high cost of good medical care has become one of the prime faults of medicine today. It prevents uniform distribution of adequate services to all people. In this way, it is an obstacle to maintenance of the highest medical standards. For these reasons, its correction is an obligation of the medical profession.

Therapy

Having diagnosed the disease, what is the remedy to be applied; or, at least, what are the therapeutic recommendations.

Before embarking upon such a discussion, it is essential to establish the broad principles necessary for therapeutic guidance. It is the quality of American medicine which is its saving grace. Anything which reduces its excellence, threatens the whole product. Any remedial agent which even potentially slows the progress of scientific advancement is detrimental to the whole organism. Always bearing this in mind, one is free to elaborate upon specific curative suggestions.

So far as the problem involves the scarcity and maldistribution of general practitioners, superficially the solution appears to be simply more general practitioners widely distributed. Such, however, is not the case. Here, a page can well be taken from Russian medical history.[8] Within the past quarter of a century, 18,000 physicians once served 170 million Russians. Now it is claimed 200,000 physicians provide medical care for even less than the original 170 million. Woven into this record, though, is a story of improvement in medical education, a graduation of specialized services, a wide distribution of all different types of medical care, and also a program of compulsory postgraduate education. All of these features should be included in any plan for increasing the number of American general practitioners.

Since greater numbers of general practitioners are necessary, some medical schools could arrange their curricula solely for the education of such physicians; or, most medical schools could educate a greater number of general practitioners than at present. Already it has been proposed that courses be so arranged that graduates be more fully grounded in all the specialties. Following the same pattern which obtains in the specialties, by meeting certain qualifications or passing certain examinations, such a physician should be able to be a diplomate of a general practitioner's board. This in itself would elevate the status of such physicians and would ensure a continuing high standard of medical care. His position and role in the world of medicine and in the public's opinion must be elevated to the extent that general practice in rural areas is as desirable as specialization in a large city.

From too few general practitioners to too many specialists again seems to be a problem simple of solution. But, again, this is not true. Only relatively are there too many specialists. Actually, a greater number of specialists of all types is needed. Still, there can be no denying that specialists of all kinds should be more widely disseminated to make them as accessible to the rural population as to city dwellers. The role of specialists in the present sociological maladjustment of medicine requires their continued contributions to research and scientific advancement. Their activities in these fields could be a good medium for continued education of the general practitioners who refer their cases, provided diagnosis, pathology and treatment receive greater emphasis in their correspondence with the referring physician. Then, too, part of the overcrowding of hospitals in the larger cities could be solved by early return of the patient to the referring physician after which the specialist could, if necessary, collaborate as a consultant by correspondence in the subsequent care of the patient.

Hospitals, too, can be integrated into proper treatment of the pathology at hand. The first requirement is more hospitals in both cities and rural areas. Part of this same formula is additional hospitals for the chronically ill and homes for the aged and convalescents. Already, in some areas, the gradation of hospitals has been effectively employed to bring all types of medical care to all people. In such schemes, there is first the rural medical center, and then district, regional, and finally, the state hospital. Services provided range from obstetrical and minor surgical care in the rural medical center to the latest developments in both diagnosis and treatment in the state hospital. Through gradation such as this, every detail of medical care is available, as needed, to the entire population.

Beyond these, the specifics of hospital therapy, comes the broader, less easily visualized role of the hospital. As your erudite president of 1945, Dr. E. L. Tuohy, so astutely suggested, the growing sphere of the hospital makes it the perfect nucleus for postgraduate medical education. Clinical-pathological conferences, consultant rounds, bedside clinics and other similar activities conducted by the attendant or consultant staff would make every hospital, both large and small, a virtual continuation-study center. Such a program would ensure control of medical phases of hospitals by the medical profession. It would constantly improve the quality of medical care. And it would be a focal point for the strongest organization of the medical profession.

Somewhat related to the hospital remedy just cited is the recapturing of the public's fancy and the former close physician-patient relationship. This goal is as important as any of the other recommendations. Its accomplishment depends upon concerted efforts of every physician to personalize both diagnosis and treatment. The utter disregard which various political factions have for the medical profession indicates the lack of either respect or admiration which the public has for physicians in general. Such a state of affairs did not exist when American medicine was dominated by the family doctor.[9] Medical service then was so personal a matter between patient and physician that political regimentation of the profession was unconsidered. Through tedious and painstaking restoration of a close patient-physician relationship, the "grass roots" influence of medicine can again be felt. Other gains to medicine from such efforts are even more important. By this, it is meant that reversion to previous emphasis of a detailed clinical history, stressing of adequate physical examination and resort to laboratory methods only as necessary, will ultimately reflect themselves in greater clinical acumen and a higher quality of medical practice.

And so, the last agent in the therapeutic armamentarium, the economic change, requires consideration. Even while considering definite measures to reduce the cost of medical care, medicine's best foot should be put forward through publicizing two facts. In the first place, widespread recognition should be given the fact that very little of the increase in cost is for the physician's services. And secondly, the increase is due to a vastly improved product, in fact, the best medical care to be found anywhere in the world.

For the wealthy, no economic remedy is necessary. For the vast body of the middle class, uniform distribution of costs by voluntary prepaid medical care programs holds forth the greatest promise. European and American experiences with compulsory and voluntary programs, respectively, show that the voluntary type is most economical and provides better service. For the indigent and marginally indigent, the Minnesota program appears best. In it, the medical, dental and other allied professions voluntarily reduce the cost of service or supplies to a level which the taxpayers can afford.

Prognosis

So, it is seen that a sociological cancer is invading the vital organs of American medicine. Its immediate cure is as imperative as the maintenance of high medical standards. Unless the medical profession itself eradicates the disease, political forces will direct its treatment. In every other country where this has occurred, not only has the quality of medicine suffered, but the cost of it has been far greater than that of the better product it replaced.

It is vitally important that the remedial measures for medicine's sociological pathology be initiated by the profession without delay. Such measures include a marked increase in the production of general practitioners, some increase of specialists, and an appreciable increase in hospital facilities for the acutely ill and for chronic, aged and convalescent patients. Also, quality as well as quantity, are important considerations. Beyond these factors, maldistribution of all medical services and facilities should be so recognized and treated that the best medical care is available to all people everywhere. These requirements can only be met by reducing the cost of medical care to the point at which it is within the financial reach of all people, or, in the case of indigents, of the governmental unit which is responsible for their medical care.

Initiation and provision of these curative measures is a primary obligation of the medical profession. Every physician has been so occupied with his professional problems that little consideration has been given these matters. This "let George do it" principle of the vast majority of physicians has been responsible medically for the same disastrous "too little and too late" experience of some Allied armies in the recent war. Unless every physician and every medical society devotes more time to the proper, broad solution of socio-economic problems of medicine, the majority of the entire profession's time will be spent filling out governmental reports under a new national compulsory health insurance program. In other words, unless organized medicine puts its own house in order, political forces will apply the remedies.

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PRIVINE HYDROCHLORIDE

Naphazoline Hydrochloride.—3(1-napthyl-methyl)imidazoline hydrochloride. — $C_{14}H_{14}N_2.HCl$. — Molecular weight-246.73.

Actions and Uses.—Privine hydrochloride is a vasoconstrictor, which, when applied to nasal mucous membranes, causes a prolonged reduction of the local swelling and congestion. It is of value in the symptomatic relief of disorders of the upper respiratory tract such as nasal congestion of allergic and inflammatory origin, acute and chronic rhinitis, vasomotor rhinitis and acute and chronic rhinosinusitis. Care should be exercised, however, when vasoconstrictors are used for prolonged medication; privine hydrochloride is no exception, although the rebound congestion of the mucosa which it may cause can be alleviated within a few days simply by discontinuing all nasal medication. Those who respond with rebound congestion may tolerate solutions weaker than the commonly used concentrations. The site of action is possibly the peripheral sympathetic nerve endings, a property assumed for epinephrine, although further work is needed to clarify this point. So far, there have been no reports proving that sufficient drug is absorbed following local application to increase the blood pressure, although this possibility should not be forgotten.

Dosage.—Adults may use several drops of the 0.1 per cent or 0.05 per cent solution, depending on the relief obtained and the sensitivity of the individual mucosa. Relief can be expected for several hours. Occasionally a smarting sensation and sneezing may develop.

For children, the 0.05 per cent solution is suggested.

Privine hydrochloride solution is buffered to a *p*H of 6.2-6.3. It is affected by aluminum and should not be used in atomizers made of this material. Otherwise the preparation can be employed by any of the conventional methods.—*New and Non-Official Remedies.*

BRUCELLOSIS—CLINICAL ASPECTS

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BRUCELLOSIS is not a common disease in humans in Minnesota. However, it is apparently on the increase. For this reason it is well that physicians in this area become acquainted with the clinical aspects of the disease. Although the disease has been recognized and studied for sixty years, it remains a diagnostic and therapeutic problem.

It was established more than sixty years ago by David Bruce that this disease is caused by a small, non-motile, gram-negative bacillus *(Brucella melitensis)*. Three varieties of this bacillus have been described and given names in accord with their principal hosts: melintensis (goat), abortus (cow), and suis (pig). Each variety has been shown to be capable of infecting man. The organism gains entrance to the human host by means of the skin or gastro-intestinal tract. The incubation period is difficult to determine but apparently varies from one week to three months.

In the ten-year period ending in 1944, 1,851 cases of human brucellosis were reported to the Minnesota State Board of Health. Inspection of their figures reveals that the disease is more than three times as frequent in males as in females. An increase in the number of cases per year is also evident. Fortunately, the mortality rate is low, being about 1 per cent in this group and roughly 3 per cent in most of the larger series reported elsewhere.

The disease is uncommon in infants and children despite the fact that this age group is exposed to large quantities of contaminated raw milk. The disease is most common among the middle-aged. Study of the distribution of the disease by occupation reveals that the majority of infections occur in farmers, housewives, domestics and packing plant employes. This seems most likely due to the frequent exposure of these groups to infected animals, raw meat and raw milk. Raw milk appears to be the most frequent source of infection in Minnesota but the handling of abortion material and raw meat constitutes important sources also.

The onset of the disease may be insidious or sudden. Acute brucellosis may be ushered in by a chill and high fever. More often, however, the illness begins with general malaise, headache, pain in the back or legs, sweats, and a low grade fever. The most common symptom is *weakness*. During the past eight years, Dr. Wesley W. Spink and I have observed forty patients in whom we felt a definite diagnosis of brucellosis could be made. In every instance, weakness was a prominent symptom. The term "undulant fever" when applied to this disease is misleading. When fever appears it is usually not undulant and in some instances fever may be entirely absent even in the presence of a bacteremia.

The physical examination may reveal very little in spite of the patient's multiple complaints; this results in much difficulty separating the disease from psychoneurosis. In about one-third of the cases one may be able to detect an enlarged spleen and in approximately 10 per cent peripheral lymphadenopathy occurs. In a few instances one may find evidence of localization of the organism upon a heart valve, in the gall bladder or in bone. There are many reports in the literature concerning complications involving the eyes, skin, central nervous system and peripheral nerves.

Since there are no symptoms or signs which are specific in this disease, the clinician must depend upon the laboratory for confirmation of his diagnosis in the individual case. Here again considerable confusion exists.

A mild anemia may be present but is not characteristic of the disease. The leukocyte count is often normal or slightly below normal, and a predominance of lymphocytes is a frequent finding. In contrast to most infectious diseases, in brucellosis the erythrocyte sedimentation rate is normal or only mildly increased. The presence of Brucella agglutinins in the blood serum is one of the most reliable findings. Difficulties arise in interpretation when the titre of agglutinins is low. It has been stated that a titre of 1:80 is diagnostic; however, it is known that early in the course of the disease agglutinins may be absent

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Read at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 20, 1946.

and a high titre may never develop. Furthermore, agglutinins may persist in low titre for a year or more after clinical recovery from active brucellosis.

The complement-fixation test does not appear to have any material advantage over the agglutination test. The opsonocytophagic test advocated by Huddleson and others as a test of the immune status of the patient does not appear to be sufficiently reliable for routine clinical usage.

The only finding which can be said to be definitely diagnostic is the repeated isolation of viable Brucella from the blood, other body fluids or tissues. Since Brucella are notably difficult to culture, in the majority of cases one is unable to obtain such evidence. In forty instances of brucellosis at the University of Minnesota Hospitals positive cultures were obtained in only one-third. Nevertheless, at least three blood cultures should be drawn in each suspected case. Special containers will be mailed to the physician for this purpose by the Laboratories of the Minnesota State Board of Health upon request.

Since skin allergy to Brucella develops early in the course of the disease the skin test is a useful method in clarifying the issue where the diagnosis is in doubt. Although purified Brucella protein antigens such as Brucellergen are probably most satisfactory for such purposes one may safely use 0.1 c.c. commercial heat-killed Brucella vaccine intradermally after diluting it 1-100 with sterile physiological saline. The reaction is usually delayed; thus the test should be read in twenty-four and forty-eight hours. The skin test has the same significance as does the Mantoux test in tuberculosis. Thus a positive skin test may be expected in nearly every case of active brucellosis. However, a positive skin test is no more reliable than the finding of a low titre of serum agglutinins in deciding whether a given patient has active brucellosis. Skin allergy persists for years after clinical recovery from the disease. Except during the first few weeks, a negative skin test may be said to rule out brucellosis; an exception to this statement must be made in those rare instances where Brucella have localized on a heart valve. In two patients with Brucella endocarditis observed at the University of Minnesota Hospitals skin allergy to Brucella antigen was absent.

As mentioned previously the prognosis as regards mortality is good. Since a majority of human Brucella infections are probably subclinical one might safely say that the mortality rate is well below 3 per cent; death, when it occurs, is usually due to some complicating disease. In the average case clinical symptoms last about three months. However, persistence of ill-defined symptoms over a period of several months or years is a distressingly frequent problem. In one instance we were able to isolate viable Brucella from a pericholecystic abscess ten years after the onset of the disease. It is in such chronic cases that the diagnosis is particularly difficult to establish.

The presence of a positive skin test *per se* is not valid evidence of active brucellosis. Five hundred fifty-three consecutive adult patients were tested recently in the Out-Patient Department of the University of Minnesota Hospitals by Dr. George N. Aagaard. One hundred four patients (19.5 per cent) were found to have a positive intradermal test, with purified Brucella protein used as the antigen. Of those with a positive skin test twenty-three also had Brucella agglutinins in their serum. However, in only eight patients was there clinical evidence of active brucellosis and in only one patient was a positive blood culture obtained.

No treatment has been developed which is specific and thoroughly reliable. In our experience best results in acute brucellosis are obtained by confining the patient to bed and giving 1 gram of sulfadiazine every four hours by mouth for two to three weeks. In most instances fever disappears and blood cultures become sterile within one week. However, if therapy is interrupted at the end of one week relapses are frequent. Even with a prolonged course of sulfadiazine therapy occasional patients may have a relapse and require a further course of therapy. Since the disease is usually of short duration when non-specific therapy, such as bed rest, is used alone, the value of sulfonamide therapy is difficult to assess. Recently we have been able to show that sulfadiazine and sulfathiazole protect infected chick embryos and allow them to hatch whereas untreated chick embryos nearly always die four or five days after innoculation with Brucella.

In chronic cases with localized suppurative lesions surgical drainage is indicated. In such cases fever therapy (Kettering hypertherm cabinet) may also be beneficial.

Although various types of vaccines and cul-

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PROGRESS IN THE CONTROL OF BRUCELLOSIS (BANG'S DISEASE) IN DOMESTIC ANIMALS

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BRUCELLOSIS or Bang's disease is a widespread, chronic, infectious disease of cattle, swine, and goats which primarily, but not infrequently affects man and other animals. Brucellosis is the major disease hazard now confronting the livestock industry. The genus Brucella includes three species. These are: *Brucella abortus,* the cause of Bang's disease in cattle, *Brucella suis,* the cause of the disease in swine, and *Brucella melitensis,* the cause of the disease in goats. In ordinary growth, character, and shape of the three germs, there are no special features that can be utilized to distinguish the one member from the other of this closely related family.

None of the organisms is confined to a single host. Therefore, one cannot differentiate the various members on the basis of host relationship. The swine strain may be found in cattle and all three may be found in man.

Brucella abortus is the causative agent of approximately 85 per cent of the cases of infectious abortion in cattle. This germ was first described by Bang in 1897. It was not recognized in the United States until 1910. *Brucella abortus* is not very resistant to disinfectants or direct sunlight. It does not withstand dryness, and it is destroyed rather quickly in the presence of putrefaction. When protected from the above conditions, it may retain its vitality for several months.

Brucella suis was discovered in 1914. For a number of years, it was thought that this germ was identical with *Brucella abortus.* Continued study showed that the germs are indistinguishable from the standpoint of morphology, but they do differ in their growth requirements, and they also differ in the disease produced in inoculated guinea pigs.

Brucella melitensis is responsible for the disease in goats. The infection in goats was first found on the Island of Malta, later in various southern European countries. This type is rare in the United States, but outbreaks in goat herds occurred in one or two of our southwestern states in 1911 and again in 1922. Of the three species of the organisms, *Brucella melitensis* is the most virulent, the swine type is next and the cattle type, *Brucella abortus,* is least virulent for man.

Parts of Body Most Often Affected

Brucella abortus affects both the male and the female, particularly the female. The disease is most prevalent and most severe in young females, especially when carrying their first calf. The organism has a predilection for embryonic tissue. The placenta becomes inflamed, the fetal circulation is destroyed, and as a result the fetus is asphyxiated and then expelled or aborted. This occurs most often when the animal is in the fifth to the seventh month of the gestation period. The act of abortion is the chief symptom or characteristic of the disease. All diseased animals, however, do not abort. Therefore, one must not measure the importance or the prevalence of the disease from the standpoint of the act of abortion only. In the male the organism takes up residence in the testes and accessory reproductive organs.

Manner of Spread of Infection

The infection in cattle occurs most often through the ingestion of feed contaminated with the discharges of the genital organs of aborting animals. Cattle may be infected experimentally by instilling a few drops of a virulent culture into the eye. This may be an important channel of infection. The skin may also be a possible mode of infection. Infection may result from the mating of infected individuals. Thus the diseased bull may infect the healthy female; or the sound bull, having recently served an infected female, may later carry the infection to a healthy female. Very early in the study of brucellosis, it was thought that the chief mode of infection was by way of the genital tract or breeding organs. Later it was shown that the digestive tract was by far the most important avenue of infection. In the case of swine the infection is disseminated mainly through the act of copulation.

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Diagnosis or Recognition of the Disease

Although there are numerous symptoms of brucellosis in cattle, they cannot be depended upon in arriving at a positive diagnosis. *The agglutination blood serum test constitutes a highly accurate and dependable method of diagnosis.* There are two methods of making the agglutination test: the test tube or slow method, and the plate or rapid method. The complement-fixation test was used extensively when the disease was first studied, but this test, while accurate and just as dependable, lacked the simplicity of the agglutination blood serum test, and therefore, was soon discarded. Attempts to perfect a skin test such as used in tuberculosis have been made from time to time and, while a number of tests have been developed, none has proved as reliable as the *agglutination test.*

Many investigators believe the *Brucella abortus* is responsible for approximately 85 per cent of all infectious abortions in cattle. *Trichomoniasis,* a venereal disease affecting both male and female cattle, is a fairly common cause of abortion and therefore, must be considered in the establishment of a positive diagnosis. Other bacteria capable of causing abortions in cattle are encountered from time to time, but they are of comparatively little importance.

Protection Through Increased Age and as a Result of Having Had the Disease

Calves infected before birth or shortly thereafter remain infected only for a short period unless they are permitted to nurse infected cows or consume infected milk for a long period of time. Within a short time after they are weaned, they become free of the infection and will, if reared in brucellosis or Bang's-free territory, develop into uninfected healthy mature animals. Animals thus developed, however, are susceptible after they have reached the age of puberty and especially as soon as they have become pregnant. Heifers in their first pregnancy are readily infected. It is in such individuals that the disease reaches its greatest height of destruction. Mature cows that have been reared in disease-free surroundings are easily infected and are likely to suffer an abortion when infected. An animal that has aborted once or that has been infected, though not having aborted, is not as readily infected a second time. A measure of resistance develops as a result of having overcome the infection. The immunity is not, however, very great and many animals will abort a second and frequently a third time. As a rule, most animals after one or two abortions will thereafter complete pregnancy in a normal manner even though many may remain infected. It has been estimated that 30 to 40 per cent of infected cows harbor the organism in their udder and eliminate it with the milk. Such cows constitute an important public health hazard.

Treatment with Drugs

There are no medicinal agents of any nature that are of value in the prevention or cure of brucellosis. Medicinal substances that have from time to time gained popularity in the treatment of the disease have proved to be worthless when subjected to carefully-controlled experiments.

Artificial Protection

The early employment of killed vaccines was extensively tried as a means of establishing artificial immunity. While such vaccines did not produce any harm to the animal thus vaccinated, the protection produced was far from solid or lasting. This form of vaccine was finally discarded.

Vaccines consisting of virulent organisms administered to young females at or about the time of puberty was next in line. Though vaccination with live virulent germs produced a more solid protection than the vaccine made up of killed organisms, unfortunately it also caused, in a high percentage of animals, udder infection which of course, was a very serious objection. Fortunately this form of vaccination was abandoned before it came into general use. The next step toward subduing the disease by vaccination consisted in the utilization of a vaccine made up of an organism of moderate virulence. The organism, known as strain 19, used in this vaccine is characterized by having high protective values and moderate disease-producing abilities, especially when used in calves. Calfhood vaccination, recommended in 1940 by the Bureau of Animal Industry, U. S. Department of Agriculture, is now recognized as an important step forward in the over-all control program of brucellosis. Vaccination must be regarded as an adjunct and not a substitute for all other methods of control. It is intended to play a supplementary role and is not to be used as a substitute method.

Control Measures

In numerous states, a Federal-State Co-operative program of control is in progress. This plan is based on the immediate removal of all infected animals as determined by the agglutination blood serum test. The county area plan of testing in Minnesota has resulted in the control of the disease in twenty-two counties. Six additional counties are engaged in the process of becoming modified brucellosis-free territory and several more counties are deeply interested in developing the county area eradication program. Other plans of control consist of the following:

1. Test and slaughter of reactors in the absence of area testing.

This method of control in a comparatively short period of time has reduced the incidence of the infection by about 50 per cent.

2. Test and slaughter and calfhood vaccination.

3. Test with retention of reactors under quarantine and calfhood vaccination.

The Vaccination of Adult Cattle

The proposal to employ strain 19 vaccine in mature animals was a natural development following the adoption of the calfhood vaccination as a part of the official control program for brucellosis in cattle. Unfortunately there is relatively little critical information in the results of the vaccination of adult cattle. There are reasons to believe that adult animals that return to a negative status following vaccination have a more solid immunity than do calves. We must not forget, however, that adult cattle when vaccinated retain a positive titer for a long time. Since legal restrictions prohibit the movement of reactor animals, the owner must be prepared to face such hazard if he elects to employ adult vaccination. Unfortunately there are no methods by which we can distinguish between a vaccination reaction and a reaction caused by natural infection. Strain 19 while non-pathogenic for calves may be pathogenic for pregnant animals particularly when such animals are in advanced pregnancy.

Public Health Aspects of the Vaccination of Mature Cattle

The consumption of raw milk from reactor cows, regardless of vaccination, constitutes a source of danger to man. Therefore, when adult vaccination is contemplated the owner of the animals should be fully advised in order that the milk from such individuals will not be used without first being pasteurized. We are not aware of any cases of brucellosis in man caused by the drinking of milk containing strain 19 organisms but there are cases on record where man has developed brucellosis through accidental exposure to strain 19. The Minnesota State Livestock Sanitary Board permits the use of strain 19 vaccine in mature cattle only in unusual circumstances and only as a herd problem.

The indiscriminate employment of the vaccination of mature cattle whether they be beef or dairy animals will seriously delay if not entirely disrupt the final control of brucellosis.

BRUCELLOSIS—CLINICAL ASPECTS

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ture filtrates have been widely used and acclaimed, the mechanism of this response remains to be studied; it may well be non-specific. Their use is not advised in the routine treatment of patients with acute brucellosis. Further intensive study of their effect in chronic brucellosis should be encouraged.

Recent reports indicate that streptomycin is effective against Brucella *in vitro* and in laboratory animals. However, the few published reports regarding its use in human brucellosis have not been so encouraging. Apparently, it is effective in acute brucellosis but relapses are frequent. Streptomycin and sulfonamides are not effective in chronic brucellosis unless bacteremia or localized infection is present, in which case at least temporary benefit may result from their use.

THE TREATMENT OF MEDICAL JAUNDICE

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THE most important clinical sign of liver disease is jaundice. This is described as visible coloration of the skin, mucus membranes and sclera due to deposits of bile pigments. This is measured by the icteric index which is the expression of the sum total of the retention and accumulation of bilirubin in the blood stream.[8] The serum contains 0.1 to 0.25 mg. bilirubin per 100 c.c. of blood normally. Bilirubin does not usually appear in the urine until the concentration in the blood is 2 or more mg. per 100 c.c.

Jaundice may be classified into three major types. The first is hemolytic jaundice, usually hereditary, but which may be acquired. It is due to blood dyscrasias, recognized from history and manifested by increased erythrocyte fragility. The second type is variously called medical, hepatic, toxic, infectious, hepato-cellular or hepatosis jaundice. This variety, with which this paper deals, is the result of degeneration or dysfunction of liver cell and is caused by:

1. Alimentary intoxication, such as food poisonings, alcohol.
2. Therapeutic agents, as arsenicals, cinchophen, bismuth, vaccines, dinitrophenol, sulphonamides, tannic acid, trinitrotolulene, blood plasma, whole blood, chloroform, carbon tetrachloride.
3. Infections, as syphilis, Weil's disease, sepsis.
4. Endogenous toxins, as intestinal, metabolic, thyrotoxicosis.
5. Exogenous toxins, as mushrooms, phosphorus.
6. Anoxemia, as heart failure.

The third type of jaundice is the obstructive group which includes calculi, tumors, and inflammations of the biliary tract. Two relatively rare forms of hyperbilirubinemia are incipient spleen-liver disease, designated as early Banti's disease or splenic anemia and secondly idiopathic persistent hyperbilirubinemia.[10] Rich separates jaundice into retention and regurgitation types. The former corresponds to the hemolytic variety, is caused by an overproduction of bilirubin, manifests a subnormal liver function, has an indirect van den Bergh and urobilirubinuria. The regurgitation type corresponds to the toxic and obstructive types, is caused by rupture of the bile canaliculi, either by obstruction of the bile ducts or necrosis of liver cells. This is manifested by a direct van den Bergh and bilirubinuria. Other classifications divide jaundice into an extra-hepatic and intra-hepatic.[16] Fantus and Steigmann[6] classify hepatic jaundice into mild and severe. In the latter group are those cases of cirrhosis of the liver which show jaundice as a terminal event. For the purposes of this paper, all diseases of the liver showing degeneration or dysfunction are called medical and those obstructive lesions of the liver or biliary tract are called surgical. As a point of differentiation, it has been noted that enlargement of the spleen is frequent in medical jaundice and generally absent in obstructive jaundice.[16] In cases of portal cirrhosis, statistics from five major clinics indicated that jaundice was a clinical sign in 30 to 65 per cent of all cases.[7]

Clinically, jaundice is accompanied by anemia, epigastric pain, nausea, vomiting and anorexia. Other common findings include hypotension, bradycardia, pruritus, headaches, tenderness over the liver region and splenomegaly. The latter may be hidden by ascites in portal cirrhosis. Depending upon the etiology, the acute symptoms last from several weeks to a few months. If the jaundice deepens progressively or oliguria occurs, it indicates obstructive jaundice and necessary exploration. In acute yellow trophy, the liver is shrunken, jaundice is deep and vomiting, ecchymoses, apathy, delirium and coma follow.[16]

The laboratory aids in differential diagnosis of medical and obstructive jaundice. It is also a valuable aid in prognosis and determining progress of the treatment.[11] In medical jaundice, there is: (1) a biphasic or direct van den Bergh; (2) tendency toward decreased blood urea nitrogen, which is low in severe cases; (3) tendency toward increased blood amino-acids; (4) normal to low blood cholesterol; (5) modified dextrose tolerance; (6) altered albumin-globulin ratio-lowered serum albumin and elevated serum globulin. In surgical jaundice, there is (1) an immediate direct van den Bergh; (2) no urobilinogen in the stools; (3) an excess of fats in stools; (4) increased plasma phosphates; and (5) high blood cholesterol.

This paper limits itself only to the discussion of medical jaundice as defined above. A physiological approach to the problem of treatment was directed after etiological factors were determined. The severity of the ailment depends upon the etiological factors involved and on the extent of liver damage. The determination of the albumin-globulin ratio is the simplest procedure in ascertaining the progress of the treatment instituted.

Biopsies and peritoneoscopy offer valuable data in diagnosis and prognosis of liver disease. Indeed, from a pathological viewpoint, by means of biopsies, it was found that lesions of the liver are similar in epidemic or infectious hepatitis, in hepatitis due to arsenotherapy and in jaundice following injection of human serum or plasma.[4] It is recommended that therapy should be continued on those medical cases even after the icterus is gone, for Weir[16] states that when jaundice is absent, decreased or has disappeared in the face of definite liver damage, the treatment should be maintained until liver function tests are normal. The principles of the therapy are elimination and removal of the etiological factors, protection of the damaged liver cell so that it may resume the power of regeneration, and restoration of normal liver functions which have been lost or temporarily destroyed. Therapy includes:

1. Elimination of etiology
2. Bed rest.
3. Dietary measures
4. Medications
5. Symptomatic care

Treatment

1. *Determination of the etiological factors* can be made by careful history, physical findings and laboratory procedures.

2. *Bed rest* tends to conserve energy, facilitates ease of carrying out diagnostic procedures, puts the patient under complete control where he can be more closely watched. Arbitrarily, a minimum of two weeks in bed is required.

3. *Dietary Management.*—Since the original studies on treatment of jaundice, the concepts of proper diets have been altered. It has been found that inadequate diets, deficient especially in Vitamin B, may lead eventually to disease of the liver.[7] The diet is the most important single therapeutic measure. It is universally agreed that the diet should be well balanced, contain sufficient Vitamin B and be adequate for body needs. In cases of liver damage, a diet high in carbohydrate, moderately high in protein, and low in fat has been found universally acceptable for proper liver reparation.

Carbohydrates.—Metabolism is fairly well understood. Liver stores carbohydrates in the form of glycogen. The liver converts glucose, levulose and galactose to glycogen and glycogen to glucose. It also forms glucose from certain amino-acids. It has been found that in diseases of the liver, there are decreased blood sugar values. Bollman and Mann[14] showed that a liver with a high storage of glycogen favors regeneration of liver parenchyma. All authors agree on a high carbohydrate intake. The intake of glucose makes for a minimum burden on the liver. It protects the liver cell, restores normal glycogen content of the liver, is easily digested, combats toxicity and tends to decrease the icteric index. Portis[14] states that when the liver cell is damaged, a higher concentration of sugar in the blood is necessary because the so-called liver threshold has been raised, since the liver cells cannot pick out glucose to manufacture glycogen as promptly as they normally would. In acute hepatic insufficiency, often resulting in the so-called liver death, there is a marked hypoglycemia.[2]. Glucose tolerance tests show interference with glycogen storage functions of the liver. Some observers noted that carbohydrates protected the liver from injury, if during the deposition of glycogen in the liver, fat was displaced.[15] It is recommended that 74 per cent of the diet should contain carbohydrates.[15] Average cases are given 400 or more grams of carbohydrate daily. Fruit juices fortified with dextrose supplements meals. In addition, sweet tea, custards and puddings may be administered. When indicated, for acute cases of gastro-intestinal upsets, intravenous glucose is given. Some observers prefer parenterally administered glucose to oral ones, for it has been found that larger amounts of dextrose can be deposited in the liver if equal amounts of carbohydrates were administered intravenously rather than orally.[15] Unfortunately large amounts of carbohydrates cannot be given by this route. Fantus[6] has recommended

10 per cent lactate solutions, 100 c.c. daily. The use of 50 c.c. 50 per cent glucose may be the preferred method since it is highly concentrated and its hypertonicity tends to further dehydration. The use of 5 to 10 units of insulin twice daily has also been advocated in the belief that the insulin will further utilization of the glucose, prevent hyperglycemia and glycosuria. It is likely that insulin metabolizes the glucose rapidly and will favor glycogen deposits in the liver. Some experimenters have shown that in cases of obstruction near the ampulla of Vater, the accessibility of pancreatic juices to the duodenum is interrupted with the conclusion that either starchy foods are to be avoided or insulin should be administered. It is important to remember that an overly sufficient caloric intake and adequate nitrogen balance is essential to restoration of the physiological functions of the liver. A minimum of 3,000 calories in three meals with three interval feedings is recommended.

Protein.—The role of the liver in metabolism and utilization of proteins is an important one. It forms glucose from certain amino acids. It manufactures plasma proteins, especially fibrinogen and albumin. This function of the liver is readily recognizable by laboratory procedures for in early cases of medical jaundice there is retention of protein levels, and no change in albumin-globulin ratio, but as the severity of the disease increases and chronicity or cirrhosis occurs, the ratio is reversed and protein levels are lowered. It is necessary therefore to retain the function of the liver to manufacture plasma proteins. It has been found that damaged livers are high in lipid content. It has also been demonstrated that the percentage of liver fat was inversely proportional to the liver protein.[7] Similarly, fatty infiltration of the liver may be a precursor of cirrhosis. Experimental production of cirrhosis of the liver by dietary means, using a diet rich in fats, has been proven.[7] An increase, moreover, in the amount of protein or carbohydrate in the diet usually decreases the amount of fat in the liver. It appears that it is necessary to decrease the amount of fat in case of damaged livers, and increase the amount of protein as well as the carbohydrate. Ravdin and his associates[15] have illustrated that protein was a more active lipotropic agent than carbohydrate and that the protein intake must be adequate before glycogen from an increased carbohydrate dietary regime can protect the damaged liver. Fagin and his group[5] have shown that a high protein diet is imperative in treating hepatitis and that the lipotropic activity of amino acid mixtures apparently is due to methionine. The administration of amino acid mixtures in portal cirrhosis caused a decreased percentage of hepatic fat and concommitant increases in liver protein.

In the normal diet, the standard recommendations have been one gram of protein per kilogram of body weight for optimum nutrition for the adult. In young, growing children and for cases where there are reduced plasma protein levels, such as the advanced cases of liver disease where jaundice is manifested, the recommendation has been for one half to twice as much protein intake.[12] The diet recommended by Fleming and Snell included 110 grams of protein.[7] Ravdin, et al.[15] have recommended a diet of 74 per cent carbohydrates with 20 per cent protein and not over 6 per cent fat. A dietary regime which has been complemented by addition of amino acids will bring total protein intake up to 140 grams daily.

The source of the protein has been carefully considered. Nitrogen equilibrium and good health have been maintained when only one tenth of the total protein intake is of animal origin. Protein from vegetables such as cereal grains, wheat, corn, rye, peas and beans are very satisfactory. Other sources, such as dairy products like milk, cheese and eggs, are also capable of supplying the essential amino acids.[12] Animal proteins are not advisable in large quantities and should be administered only as a variety food. Animal proteins are avoided because they contain considerable amounts of undesired fat. Many observers have noted that animal proteins have an excess of cystine which has been shown to induce acute hepatic necrosis.[7] It is also demonstrable that cirrhosis which has been produced by diets low in protein with added cystine, are prevented by feeding choline, methionine and casein, the latter being obtained from dairy proteins. Fagin, et al.[5] report good results in treating cirrhosis of the liver with a high carbohydrate, high protein, low fat diet. They recommend vitamin supplements, choline, methionine or amino acid mixtures.

Medications

Ottenberg[13] has shown that in acute hepatitis or catarrhal jaundice, stimulation of bile secretion eliminates the possibility of back pressure in the larger ducts and thereby assists the liver in secreting bile. Bile salts are of definite advantage, although the use of oxidized unconjugated bile acids which cause a greatly increased volume flow may actually depress normal constituents of bile.[16] The unoxidized conjugated bile salts which increase volume flow and natural biliary constituents tend to relieve intra-hepatic capillary pressure, increase drainage from the liver and relax the sphincter of Vater. Salicylates or Carlsbad salts may also be of value in this respect.

Vitamins play an important part in re-establishment of normal liver physiology. The liver is capable of manufacturing Vitamin A from carotene. It stores Vitamin B complex, Vitamin A and D and the anti-pernicious anemia factor. Greene[7] points out that yeast tends to prevent cirrhosis of the liver. Annis and Comfort[1] indicate that Vitamin B-1 and the complex are essential to normal liver metabolism. Vitamin K decreases the bleeding tendency in some cases of jaundice. Butt[2] noticed a deficiency of prothrombin of the blood due to failure of absorption of certain sterols which is responsible for the hemorrhagic diathesis in jaundice. Administration of Vitamin K in conjunction with bile salts is indicated wherever prothrombin time is altered.

Proteins in various forms may be used to supplement the diet. Amino acids may be given by mouth and intravenously. The amino acid mixtures are prepared by hydrolyzing casein and contain amino acids in the same proportion as they are found in casein. The methionine content of casein is 3 per cent. It is possible that methionine may supply methyl groups for the formation of choline or an active compound derived from choline which is of proven value in preventing further liver necrosis or cirrhosis.[5] However, the use of intravenous hydrolysate of protein is not practical unless given in large quantities. Plasma albumin, where a single protein is desirable, may be given intravenously. It has the disadvantage of being available in limited amounts, at the present time. Whole blood and gelatins given intravenously are of questionable value. Oral administrations of hydrolysates of casein and skimmed milk with its low fat content offer the best supplements to a high protein dietary regime. Casein is an active lipotropic agent which provides protection from hepato-toxic agents. Recently, the intravenous readministration of sterile, siphonated ascitic fluid which is very similar chemically to serum, has been advocated.[7] If it is concentrated, or given in large doses, severe reactions occur. In amounts of 500 to 1000 c.c. daily, reactions are very unlikely. However, the ascitic fluid should contain more than 1 per cent protein to warrant its re-injection.

Liver extracts are recommended for their replacement value where liver degeneration has occurred. There appears to be a correlation between liver extract and Vitamin B complex.[1] It also combats the anemia seen in jaundice. Approximately 60 c.c. daily, or 2 c.c. intramuscularly three times a week are given. If ascites occurs with the jaundice, Fantus[6] prefers to use the parenteral method.

Symptomatic Care

The value of diuretics is questionable. In the chronic or resolution stages of hepatic disease, the diuretic tends to further dehydrate the liver and wash out the bilirubin from tissues. The diuresis is a prognostic sign. If marked spontaneous diuresis occurs, the prognosis is very favorable. If the urinary output remains unchanged, chances of recovery are considered poor. In early stages of cirrhosis, ascites may be controlled by use of ammonium chloride or the mercurial diuretics, intravenously or by suppository. The efficiency of mercurial diuretics varies with the difference between the protein concentration of the blood plasma and that of the ascitic fluid. The more advanced the cirrhosis, the greater will be the reduction in the serum proteins and, therefore, the less effective the response to mercurial diuretics.[13] Diuretics should be used cautiously since febrile reactions, hematuria and inadequate response are contra-indications to its continued use.

Portis recommends potassium iodide as an alterative.[14] It is of some value in luetic hepatitis which is characterized by early fever and more pronounced pain. In these cases, mercury inunctions are of benefit since arsenic and bismuth are contraindicated.

Cathartics are employed to relieve the biliary stasis, increase peristalsis, eliminate alimentary intoxications. It may be of value in infective hepatitis in which experimenters have claimed to have found a causal virus in the feces of infected patients. The preference of cathartics has been toward magnesium sulfate, citrate of magnesia, and calomel.

Digitalis may be given as indicated to build up the cardiac reserve and decrease congestion. Paracentesis, delayed as long as possible to prevent peritoneal irritation, must be accomplished for ascites. If bradycardia or hypotension is severe, whole blood, serum albumin or plasma may be given. Duodenal drainage may be accomplished but its chief rôle is diagnostic rather than therapeutic for it exhausts the patient, interferes with nutrition and is not recommended routinely. For anoxemia of cardiac decompensation, transfusions of small quantities of whole blood may be given. Esophageal varices may be treated by tamponades or injections in the hands of a skillful operator. Hemorrhages are treated symptomatically. Anemia is combatted by the use of iron and/or liver, depending upon the laboratory findings. Puritus is another prognostic sign for as jaundice deepens, the itching becomes more intense. If pruritus occurs before jaundice, it indicates an obstructive type. Intense itching may be relieved by colloidal starch or oatmeal baths, cold enemas, aspirin with belladonna or intravenous minute quantities of novocaine.

Summary

1. Jaundice as a manifestation of hepatic disease has been discussed briefly.

2. Several classifications of jaundice, its various types, its synonyms, its clinical manifestations, and laboratory recognition and its etiology have been reviewed.

3. The physiological considerations in the treatment of jaundice are indicated.

4. Treatment is primarily a dietary one using a high carbohydrate (74 per cent), high vegetable and dairy protein (20 per cent) and low fat (6 per cent) diet.

5. Medications which include bile salts, amino acids, vitamins and liver extracts are important adjunct therapy.

6. Symptomatic care is given as indicated.

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THE ECONOMIC COST OF PARESIS IN THE UNITED STATES

The direct cost to the taxpayer of maintaining paretics is over 11 million dollars annually and the money loss of income is approximately 112 million dollars for male paretics.

The cost of maintenance of paretics in 1940 is estimated as approximately 7.5 million dollars for an average resident population of 20,963 in State hospitals and 3.8 million dollars for an average patient population of 5,143 in Veterans Administration Facilities. The figure of $11,391,545 is an underestimation of the cost to the taxpayer of the United States of maintaining paretics but it is a definite, calculable cost.

The estimated annual loss of working years of life in the United States caused by paresis is 75,729 man-years and 23,645 woman-years. Divided into occupational groups, the figures for men represent 10,655 professional and kindred workers; 11,793 salespersons; 3,768 clerical workers; 7,194 service workmen; 23,273 skilled workers or craftsmen; 6,138 semi-skilled or production workers; 10,908 unskilled or physical laborers.

The median age of outset of paresis is 42 for men and 41 for women. The median age on admission for paretics to State institutions is 44 for men and 42 for women. Paresis usually strikes persons around 40 years of age, the age at which men in some occupations have reached their maximum earning capacity.—ALBERT P. ISKRANT, *Journal of Venereal Disease Information*, Washington, 26:175-183, (August) 1945.

HYPERSENSITIVITY TO PENICILLIN SIMULATING SERUM SICKNESS

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WITH the advent of parenteral penicillin therapy, untoward reactions to penicillin (commercial), as reported by various investigators, have been extremely variable.

Numerous authors[2,3,4] have suggested an analogy to serum sickness, not because of the similarity of symptoms, but because of the delay in the onset of symptoms, which usually occur after cessation of penicillin therapy.

The two following cases are reported because of their marked similarity to serum sickness and the scarcity of such reports[1] in the literature.

Report of Cases

Case 1.—D. N. D., a white soldier, aged twenty-seven, was admitted to the hospital on October 30, 1945, with the complaint of chills, fever and a left sided chest pain, especially marked on deep breathing, of twenty-four hours' duration.

At the time of admission, the patient presented the additional past history of hospitalization early in October, 1945, with the same complaint of chills, fever and left sided chest pain. At that time a diagnosis of pneumonia was made, for which the patient received penicilin for five days. The patient's subsequent course was uneventful and he was released three weeks later, five days prior to his admission here. Otherwise the patient's history was essentially negative. His personal and familial allergic history was also negative.

Physical examination on admission revealed an acutely ill individual. The temperature was 103.2 F., pulse 112, respirations 26. Examination of the chest revealed distant breath sounds, with a few crepitant râles, in the left axilla. The remainder of the chest was essentially negative. The laboratory studies revealed a sedimentation rate of 17 mm., white blood cells 12,500, hemoglobin 95 per cent, polymorphonuclears 84 per cent, lymphocytes 13 per cent, 1 monocyte and 2 eosinophiles The urine was normal; Kahn was negative.

The clinical impression at the time of admission was that of an atypical pneumonia and the patient was treated expectantly. During the evening of November 2, 1945, because of a sharp rise in temperature to 101 F., penicillin therapy was instituted. The patient received 20,000 units of penicillin every three hours for five doses, at which time penicillin was discontinued early on November 3, 1945.

The patient's subsequent course was uneventful until November 11, 1945, when he suddenly developed a generalized urticaria. Later in the same day he developed a generalized adenopathy and a polyarthritis involving both knees, elbows and the small joints of both hands and feet. There was definite redness and swelling of the above-mentioned joints. The patient's temperature, which had been entirely normal since November 3, 1945, suddenly rose to 101 F. by 4:30 P.M. and remained elevated until 2:00 P.M. on November 13, 1945. The patient's symptoms remained marked for three days, but by November 14, 1945, the urticaria and polyarthritis began to subside. On November 16, six days after onset, the patient was again asymptomatic.

Because of an unavoidable sudden transfer to another Army hospital, the patient could not be studied immunologically. Thus, skin testing was not done until December 6, 1945, three weeks after the acute illness, when patient was again available for study. At that time both direct and passive transfer skin tests with penicillin (commercial) were negative.

Case 2.—S.L.W., a white female infant, aged twenty-two months, received 20,000 units of penicillin every three hours, totaling 100,000 units, for an acute otitis media on January 6, 1946. No penicillin was given the next day, but on January 8, 1946, because of a sudden marked rise of temperature, she was given one injection of penicillin in beeswax which contained 100,000 units.

The patient's personal allergic history was entirely negative. However, the father has had recurrent migraine, easily precipitated by pork and chocolate, for twelve years. Patient's only previous contact with penicillin was in March, 1945, for acute otitis media.

Following the penicillin therapy the infant was entirely asymptomatic until January 16, 1946, when she suddenly developed a generalized urticaria with an elevated temperature of 100 F. She was irritable and listless. The patient's father, who is a physician, noted her movements were guarded. A careful examination by him revealed generalized joint tenderness, especially of both knees. Other than apparent swelling of the thumb of the right hand, no swelling or redness of the joints was noted. The following day her temperature was 102 F. and her urticaria and polyarthralgia persisted. In addition, bilateral cervical, axillary and inguinal lymphadenopathy became evident. The lymph nodes were moderate in size, tender and discreet.

On January 20, 1946 the patient was completely free of her urticaria for the first time since its onset. In addition she was afebrile and free of her polyarthralgia. However, her generalized lymphadenopathy still persisted. At this time an intradermal test, containing 20 units (.01 c.c. solution containing 2,000 units per c.c.) of penicillin (commercial) was definitely positive. A control test utilizing the diluent was negative. Twenty minutes after the positive skin test became evident, a generalized urticaria was noted, which persisted for approxi-

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ETHYLENE DISULPHONATE IN ALLERGY

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IN 1940, Evans, Badman, and Maisin[3] suggested that allergy is the result of a disturbance in carbohydrate metabolism which is due to lack of a normal carrier catalyst. To remedy this lack of an oxidation catalyst, they used ethylene disulphonate (Allergosil) in the extremely high dilution of 1.10^{-15}. They reported on its use in the treatment of allergy in man and particularly in the treatment of asthma. They reported very excellent results and stated that this substance would afford a "degree of protection" to animals against anaphylactic shock. Several reports have appeared since. Norman M. Smith[6] reported 413 cases with 76.47 per cent complete relief. Clifford L. Bartlett[1] reports 247 cases of allergy in children with satisfactory results in 86.64 per cent. Wasson[7] treated a small group of allergic patients and states that "many seem to have benefited from administration of ethylene disulphonate."

W. Ray Shannon[4] states, "I have given substantial trial to ethylene disulphonate and with very satisfactory results. Complete failures have been few, complete successes also, but the great majority of patients have been benefited to a striking degree. Clinical results are too striking to be disregarded.

In the November 14, 1942, issue, the *Journal of the American Medical Association*[2], in an editorial, criticized the publicity of Allergosil. It went on to state that the promoter of this product, Edward H. Spicer, has also previously used "Edwenil" and now marketed ethylene disulphonate through the Spicer Gerhart Company of Sunland, California, at $13.50 per 2 c.c. dose. Dr. Austin Smith, Secretary of the American Medical Association Council on Pharmacy and Chemistry[5] writes:

> "The number of inquiries regarding ethylene disulphonate has been so great that this office has very recently sent a letter to fifteen doctors who are known to have done investigational work with Allergosil (ethylene disulphonate). To date we have had time to receive only a few replies, but so far all the replies unequivocally state that there was observed no greater benefit following the use of Allergosil than that which would follow the use of a placebo such as distilled water and isotonic solution of sodium chloride.
>
> "The criticism of the Allergosil publicity (November 14, 1942)[2] has received additional support in the form of a report by Fisk, Small and Foord of the Research Department of Collis, P., and Howard Huntington Memorial Hospital, Pasadena California. These investigators found that under the conditions of their experiment, ethylene disulphonate 'did not produce a significant degree of shock.' Thirty-three of their sensitized animals treated with Allergosil showed a mortality rate of 60.51 per cent; thirty-one animals treated with distilled water showed a mortality rate of 67.74; and twenty-five untreated animals showed a mortality rate of 72 per cent."

Ethylene disulphonate was used in the allergy clinic of the University of Minnesota in the manner recommended in the papers reporting on its benefits. All patients treated were well controlled, having been observed under usual conditions for several months to years. All had had complete allergy workup including skin tests, as well as complete physical examination including all necessary laboratory procedures in the Out-Patient Department of Internal Medicine. Alcohol, opium derivatives, barbiturates, sulfa drugs, aspirin and anesthetics were excluded as per instructions given. The standard dose was 2 c.c. Because the solution is highly unstable and rapidly oxidizes in presence of air and oil and certain chemicals, the clean sterile glass syringe and needle provided were always used. No disinfectant was used on the skin. The contents of the ampule were rapidly drawn into the syringe and the needle placed in position. The injection was given deep in the deltoid muscle. The injection is followed by fibrillation of the muscle but is not particularly painful.

Ethylene disulphonate was used in eighteen authentic cases of the allergic state including twelve of asthma, and six of allergic rhinitis. All these patients had three injections of the drug at intervals of one week. Under these conditions we did not observe any results whatsoever to warrant continuance of this form of therapy. As there

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RUPTURED DIVERTICULUM OF THE JEJUNUM

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DIVERTICULA of the small intestine, as a whole, are not of such rare occurrence when we consider the reports of our roentgenologists who occasionally find one or two diverticula in the duodenum during a gastro-intestinal series, or the finding of an occasional Meckel's diverticulum of the ileum during a surgical or postmortem procedure.

Diverticula of the jejunum and especially multiple diverticula are rare. Only one-third of the cases reported are multiple. Our local roentgenologists and pathologists who have done many thousands of examinations fail to recall having seen more than a half dozen cases of diverticula of the jejunum. Less than 250 cases have been reported up to 1946. The first x-ray diagnosis of jejunal diverticula is credited to J. T. Case[1] in 1920. In a series of 6847 gastro-intestinal series he found four patients with one or more jejunal diverticula and in the same group eigthy-five cases of duodenal diverticula.

The surgical importance of jejunal diverticula is dependent on the symptoms produced and these are dependent on size, mobility and drainage. The percentage with good drainage giving symptoms is evidently very small. Dwegney and Bailey[2] report a case of multiple diverticula of the jejunum with the diverticulum causing trouble holding one-half pint of fluid and extending well into the mesentery of the gut. It had a small outlet, was rigidly held and had no musculature in its walls to expell contents. This patient had been an invalid for years, had several operations and had been put in the nervous dyspepsia class. The diagnosis was found finally by x-ray. Resection, end-to-end anastomosis and complete recovery resulted.

F. F. Rudder[4] reports a similar case as to size with acute diverticulitis. This diverticulum was on a small pedicle and was attached to the dorsum of the jejunum. He also makes the unusual observation: "In the couse of surgical operations requiring an inspection of the stomach and upper gastro-intestinal tract, I have encountered both single and multiple diverticula of the jejunum of fairly numerous occasions. In no instance either pre- or postoperatively had this condition given rise to any symptoms."

J. A. Johnson[3] reports a case of multiple diverticula of the jejunum with one becoming inflamed causing adhesions and a volvulus, necessitating resection. He did an end-to-end anastomosis. This seventy-two-year-old man had several months' history of symptoms simulating partial obstruction.

Van Ravensway and Winn[5] report a case of small jejunal diverticula found by x-ray to be lying largely in the mesentery. Poor drainage of the diverticulum kept up a chronic inflammation until the sac was removed, and the small stump inverted with purse string sutures. Their paper gives a splendid discussion of the whole subject of jejunal diverticula.

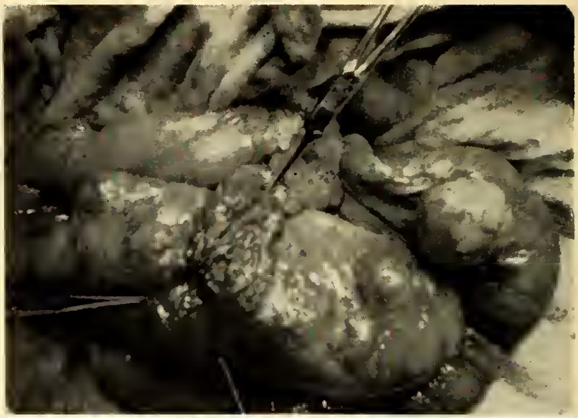
Etiologically, jejunal diverticula are classed as congenital and acquired. The congenital type are supposed to be remnants of accessory epithelial nodules and to have a muscular coat, whereas the acquired type have only the peritoneal and mucosal layers. It is quite evident, however, that to get the multiple diverticula which develop on the mesenteric side of the gut where the blood vessels enter the gut wall, there must be a marked congenital absence of musculature development which permits intra-gut pressure to blow these "bubbles."

Case History

The patient, Wm. M., aged seventy-nine, a retired locomotive engineer, came to our office January 15, 1946, complaining of pain and tenderness at the navel. He stated that about two weeks before, he had fallen, striking his abdomen. He had immediate pain which had persisted, though the degree of pain was less, but local tenderness to pressure was increasing. He further said that for three days he passed blood in his urine following the fall. His temperature was 100.2° F. He was a thin wiry type with a low blood pressure and no marked arteriosclerosis. He stated he never was sick, had to take something for constipation, had a good appetite and slept well. There was no frequency of urination, though he had a moderately large prostate. Urine was negative for blood, albumin or sugar. At the navel there was a red indurated very tender area about ready to discharge pus. With a little local anesthetic this lesion was opened and drained of considerable pus. He was sent to the hospital after first giving him 100,000 units of sodium penicillin in 8 c.c. of water into the knee joint. At the hospital, hot continuous compresses and 120,000 units of penicillin daily gave him considerable comfort. That there was still considerable deep slough and pus was evident and on January 28, 1946, the incision was enlarged and free drainage obtained, Colon bacillia were found in smear and culture. On his fourth postoperative day a very copious discharge appeared which excoriated the skin. It was evident that a small bowel fistula was present. The abdominal wall inflammation rapidly subsided but there remained a firm mass underneath which was still tender to pressure. There was a well-established small bowel fistula pouring out digestive fluid which required free use of aluminum paste to keep the skin comfortable. Within a few days he was eating well and walking about very comfortably except for a large left inguinal hernia which he had not been able to control with a truss.

He was operated upon under sodium pentothol induction and intra-tracheally administered cyclopropane on February 13, 1946. The elliptical incision centered the navel and was made to remove it. A loop of jejunum was found attached to the abdominal wall under the navel. Its lumen was not constricted. On either side of this attachment were several diverticula of the intestinal wall. The jejunum was dissected free from the abdominal wall; its attached surface had been the location of a ruptured inflamed diverticulum (Fig. 1). A circular invaginating suture supplemented by interrupted muscle and peritoneal suture closed off the raw area. This was re-enforced by omentum which was attached at the mesenteric border. Starting about ten inches from Treitz ligament were some fifteen diverticula in the next two feet of jejunum. These varied in size from the end of the average finger to larger than the end of the average thumb (Fig. 2). They were all on the mesenteric side of the bowel. The abdomen was closed with layer sutures also using some buried stainless steel wire sutures to support the extra tension where the navel was resected. The whole procedure went smoothly so that while the abdomen was being closed, the large left inguinal hernia was repaired, removing the cord and testicle to facilitate rapid and adequate closure. Nasal Wagensteen decompression, Varco feeding, free use of penicillin and the usual supportive handling resulted in a very smooth recovery.

We are free to confess that jejunal diverticula as a causative factor were not thought of in our diagnosis, though a Mekel's diverticulum was considered. Since this seventy-nine-year-old patient was having trouble here for the first time, neither an embryonic vitelline duct nor allantoic remains was a factor in the present trouble. Yet, he had a mass under the navel discharging small bowel contents and he also had passed blood in his urine for three days. There had been no evidence of a hernia and there was not a deep umbilical dimple which might encourage infection. Obviously, trauma was the causative factor.



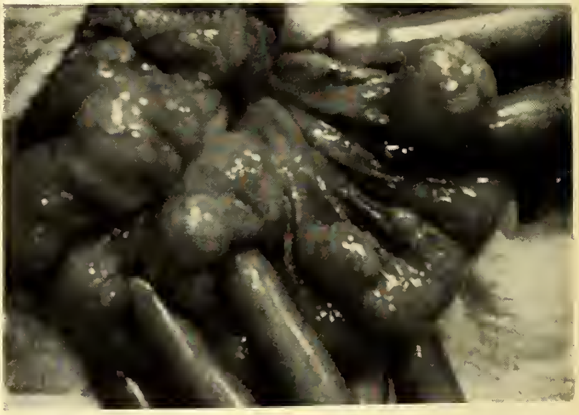


Fig. 1. *(above)* Hemostats outlining denuded jejunal area with fistula near lower left hemostat.

Fig. 2. *(below)* Other intact diverticula of the jejunum showing variation in size. Photographed by Dr. A. E. Borgen.

A barium enema in this case showed no colon diverticula or other pathology.

Summary

We have reported a case of multiple acquired diverticula of the first part of the jejunum, in which a fall caused the rupture of one of the diverticula. A localized abscess ruptured into the abdominal wall to be followed by the formation of a fistula draining intestinal juices.

Closure of the fistulous remnant of the ruptured diverticulum was followed by an uneventful recovery.

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INDUSTRIAL HEALTH IN NAVY WAR PLANTS

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OUR Navy is a fighting force. It is in this light that we think of it. But behind this force is a secondary or an industrial force, upon which the maintenance, repair, and supply of the "fighting fleets" are vitally and intimately dependent. The ships and planes with their weapons and impedimenta would soon be helpless without the home shore bases. The immensity of this task and of this obligation can be illustrated by the fact that the Navy was the second largest employer of civilian labor in the country. At the peak of production during the War, more than 650,000 civilian workers labored in our continental Navy Yards, Air Stations, Ordnance, and Supply Depots. All these employes were on Civil Service.

A relatively small group of Navy officers and men were detailed to manage these industrial activities. The Navy Medical Department undertook the care of these civilian workers for all their occupational injuries and diseases, and for such other on-the-job illnesses as necessary, and as were reasonable.

About a year before Pearl Harbor The Bureau of Medicine and Surgery of the Navy inaugerated an industrial Health program in all the many shore naval industrial activities. Small groups of medical officers were enrolled for a three-month course of Industrial Hygiene at Columbia University and at Harvard in preparation to the carrying out of this program. At first the idea of a medical officer reporting to a Navy activity as an industrial hygiene officer within the medical organization was a novel innovation, and not too well received.

The duties of the Industrial Medical Officer were varied and flexible. Much was dependent upon the size and type of the industrial activity. To begin with, he was to make a careful survey of the entire plant. In this task, at many yards, he had the professional assistance of a chemical engineer trained in industrial hygiene as well as a laboratory. He would acquaint himself with the type of jobs available and their job requirements; he studied the hazardous and potentially hazardous occupations in collaboration with the Safety Officer. All this helped immeasurably in advising the command on medical and public health problems relative to the workers and the plant. Further, the Industrial Medical Officer was to aid in the establishment and development of the yard's industrial dispensary. In this dispensary there was always a great deal of activity. The preplacement physical examinations were usually performed here. This examination became increasingly important as the years of the War lengthened, and the quality of the workers on the labor market diminished. The knowledge of the types of jobs available and the infirmities of the applicant had to be fitted together to produce the greatest efficiency for the plant and the protection of the worker's health. By 1943 almost no worker was too disabled to find work in a War plant. Cardiacs, epileptics, psychopathic personalities, the very old and school children, all began to appear in proportionally greater numbers for employment. It was facetiously said that the physical examination was primarily to "feel if the applicant is still warm" before he is hired! Thus, it was necessary for the Industrial Medical Officer to be in close co-operation with the Personnel Relations Officer, the Safety Officer, and the civilian supervisors in the shops. Epileptics had to be placed under the eye of an advised and sympathetic boss at a job at which he could neither injure himself, his fellow workers, or property; the obese middle-aged housewife with the troublesome varicose veins and many household duties to perform after work-hours, had to be provided with a job at which she could be seated to work much of the day; the cardiac and hypertensive had to be provided ground-level work, preferably away from machinery; the alcoholic, the stout woman with chronic gall-bladder disease, the anemic spinster, and certain others could not be permitted to work in jobs requiring the use of benzol, or carbon tetrachloride, or as radium dial painters. Every plant had a veritable living museum of pathology.

Periodically, workers engaged in hazardous, or potentially hazardous jobs were examined. X-ray films of the lungs were made on the sand-blasters

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Read before the Ramsey County Medical Society, Saint Paul, Minnesota, February 25, 1946.

using silicates; complete blood counts were studied on those engaged in work exposing them to benzol, toluol, or other related benzene compounds, or the chlorinated hydrocarbons; basophilic aggregation tests were done on those exposed to the lead hazard; the radon content in breath samples was determined for the radium dial painters, along with complete blood counts and physical examinations; crane operators, truck drivers, and others operating power equipment required complete physical examinations with special attention to their visual acuity. Any evidences of toxic absorption called for investigation of the employe as well as the processes in which he was engaged.

By 1944 many of the smaller plants were employing as high as 45 per cent of women workers. Almost no job was too abnoxious or difficult for some of the girls. But their entrance into the working force of an industry brought with it many new problems. More and separate washroom facilities were needed; more space and facilities were needed for the dispensaries, and in proportion, more beds to care for them in minor temporary illness on the job. Frequently, the medical officer had to act as an intermediary for the woman worker and some hard-boiled strawboss in explaining tactfully her inefficiency or temporary absence with dysmenorrhea or early pregnancy. In the main, with the advent of women in industry, the average shop was much improved in cleanliness, and one may say, in hominess. Bouquets of flowers, ribbons, lipstick and other evidences of femininity soon made their appearance to brighten up dreary and monotonous work benches and shop corners.

There were always injuries to be cared for in the Industrial Dispensary, in spite of an active and vigorous safety program. These injuries varied in severity and type with the nature of operations of the particular yard. In the machine shops there were always cases of foreign bodies in the eyes and hands, also lacerations of the fingers and hands, cutting oil dermatitis, fractures of the toes and metatarsals as a result of dropping heavy objects on the feet accidentally. In the aircraft assembly and repair shops there were always falls from the wings or fuselage of the planes. In the shipyards the heavy type of industry brought more severe injuries of various types.

Then there is the more human side of the work of the industrial medical officer. After the worker becomes better acquainted with this officer and with his relative position in the plant, he finds that he can confide in him and seek his aid in those intimate details that are upsetting him mentally and emotionally, causing him to be absent frequently, or to be performing his work poorly, or to be disturbing his relations with his fellow workers. This is now frequently referred to the psychosomatic phase in the practice of medicine. Innumerable incidences could be recounted by the physicians in industry of services in this direction. Frequently a man's social life can be straightened out, and his relations with his boss and his fellow workers brought into harmony.

A program that was looked askance upon at its inception, was regarded as an important asset before the War's end.

ETHYLENE DISULPHONATE IN ALLERGY

(Continued from Page 690)

were no results in these observed cases, there seemed no need of any control cases.

(Material furnished by the Spicer Gearhart Company of Pasadena, California.)

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CLINICAL-PATHOLOGICAL CONFERENCES

HORMONAL DYSCRASIAS OF THE BREAST

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Dr. A. H. Wells: It is our intention to present a brief review of the hormonal dyscrasias of the female breast, including the conditions generally discussed under the subject of chronic cystic mastitis. This presentation is a preview of a more complete report of a current study of all the surgical breast cases treated in this hospital during the past ten years. Although the terminology of the various lesions encountered under this broad subject is almost as varied as the number of authors describing it, nevertheless, there is considerable agreement as to the various histologic and clinical manifestations. An ever-increasing volume of group studies pertaining to the relationship of the hormonal dyscrasias to cancer of the breast and the results of varied therapeutic efforts give promise of some clarification of this frequently discussed disease process.

Classification

As yet the classification cannot be on an etiologic basis. The next best arrangement is an anatomic division of the various interrelated manifestations comprising this closely allied group of breast diseases. The lines of demarcation between the physiologic and pathologic are impossible to draw with any degree of certainty. It appears that any one type of lesion is an exaggeration of some part of the normal physiologic changes of the breast as seen during puberty, menstrual cycle, pregnancy, and menopause. These include (1) intralobular connective tissue proliferation, (2) glandular and ductal hyperplasia, (3) ductal dilatation, (4) absorption of desquamated and secretary debris from ducts, and (5) lymphocytic infiltration. Although there is considerable overlapping of the various hormonal dysplasias of the breast, most cases have one form of change predominating.

The pathologic variants of the physiologic entity of intralobular connective tissue proliferation include (1) excessive diffuse intralobular connective tissue proliferations of varying degrees which tend to progress from edematous and cellular lesions, adenofibrosis (Fig. 3), into old hyalinized poorly cellular connective tissue (Fig. 4) sometimes called chronic fibrous mastitis; and (2) localized fibroadenomata (Fig. 5) which are generally not included in the classification of chronic systic mastitis. However, there is no sharp line of demarcation between this local manifestation (fibroadenoma) and the more diffuse forms of connective tissue proliferation. The interlobular connective tissue is much less active than the intralobular fibrous tissue and plays no important part in breast dysplasias. Combinations of intralobular connective tissue and glandular proliferation may be in the form of diffuse, patchy, or isolated lesions. These have at times been called intraductal papilloma (Fig. 6), sclerosing adenoma (Fig. 7), fibroadenoma (Fig. 5), and diffuse adenofibrosis (Fig. 3).

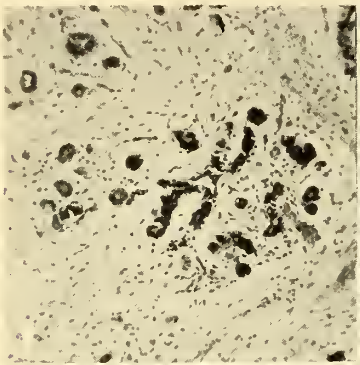
The lesions with predominant epithelial features more truly represent an exaggeration of the process of glandular and ductal hyperplasia, our second physiologic entity. These may be in the form of adenomas or layered and papilliferous epithelial hyperplasias of ducts (Fig. 8). Diffuse, patchy, or isolated examples of adenomatous, intraductal, and sclerosing adenomatous forms of epithelial hyperplasia of varying degrees of severity are found. There appears to be a progression from tiny epithelial protrusions into duct lumina to large papillomatous growths. Large intraductal papillomata (Fig. 6) are generally considered a pathologic entity. However, in many instances there is an interconnection between this lesion and similar papillomata found in association with other lesions of chronic cystic mastitis. Thus, like the intralobular connective tissue hyperplastic changes, the glandular and ductal epithelial growths can be found in diffuse, patchy, and isolated forms.

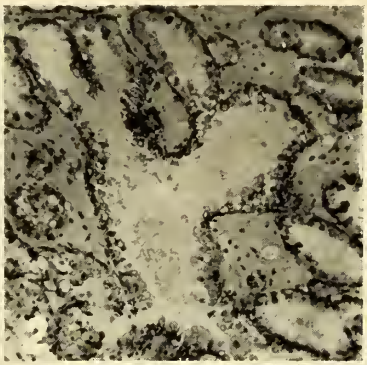
The physiologic manifestation of ductal dilatation frequently exceeds normal limits and generally is a diffuse type of lesion involving many ducts, simple cystic mastitis of the multiple small type (Fig. 9). Isolated lesions of a large size producing discrete cysts rather than uniformly dilated ducts should be separately classified as cystic mastitis of the large isolated type or blue-domed cysts (Fig. 10). Various degrees of ductal and glandular dilatation are generally expected to be found associated with any combination of the other hormonal dysplasias.

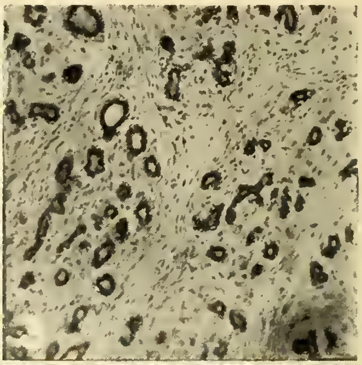
Interference with the absorption of desquamative and secretory debris from tubules (Fig. 9), although commonly seen, appears to play a role of lesser importance than the other alterations of physiologic activities of the breast.. This material may accumulate to the point of forming pasty casts of dilated large tubules throughout the breast. In some instances it may burst out into surrounding tissue causing foreign body inflammatory reactions. In other instances a low-grade lymphocytic infiltration about the ducts (Fig. 10) may be indicative of its irritative nature. A slight lymphocytic infiltration of the intralobular connective tissue does occur in the normal breast of menstruating women. Exaggerations of this process appear to have led to the misnomer of "chronic cystic mastitis."

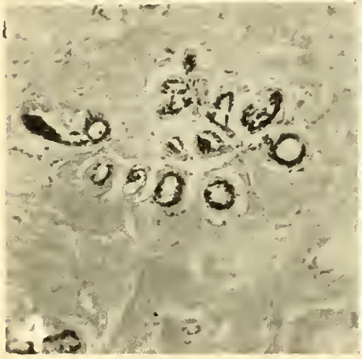
From the Department of Pathology, St. Luke's Hospital, Duluth; Arthur H. Wells, M.D., Pathologist.

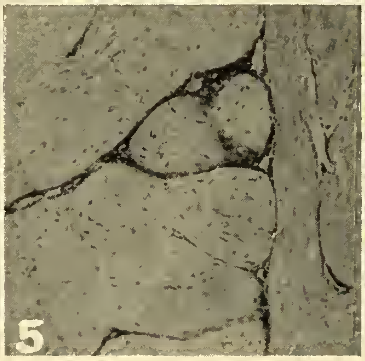
For practical clinical purposes, there is a tendency in the literature concerning hormonal dyscrasias to divide the cases into a few more or less distinctive groups depending upon both clinical and histologic characteristics. This is particularly important in connection with the evaluation of carcinogenic tendencies of the different lesnons. Fibroadenoma (Fig. 5) is not generally classified as a form of chronic cystic mastitis, possibly because it so frequently appears in young women as a discrete encapsulated mass. There is a second large group of younger women suffering from painful, firm breasts which on biopsy reveal mild exaggerations of the diffuse proliferation of intralobular connective tissue and glandular elements (Fig. 3). This general group has been designated as diffuse adenofibrosis by Cole, mazoplasia by Cheatle and Cutler, and mastodynia by Geschickter. A third fairly well-defined group are women with an isolated large cyst (Fig. 10) occurring generally near the menopause. A large part of the remainder of the women with hormonal dysplasias can be divided into two overlapping groups occurring most frequently between thirty and forty-five years of age. These are multiple small simple cystic mastitis (Fig. 9) and those commonly referred to as Schimmelbusch disease or adenocystoma (Fig. 8). There is generally a rather diffuse but mild to moderate dilatation of ducts and glands with varying amounts of epithelial, especially intraductal epithelial, proliferation in adenocystoma. Histologically adenocystomata can be separated into the benign and precancerous lesions dependent primarily upon the degree of epitheial noeplasia found in biopsy material and not upon clinical criterias.











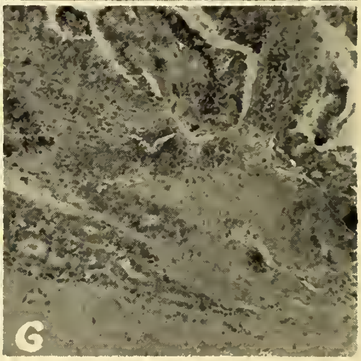


Fig. 1. Normal mammary lobule with ducts, glands, periacinar and periductal connective tissue and extralobular connective tissue.

Fig. 2. Normal lactating breast with dilated ducts and glands, hyperplastic lactating epithelium, edematous intralobular connective tissue.

Fig. 3. Adenofibrosis with proliferation of acini and periacinar connective tissue.

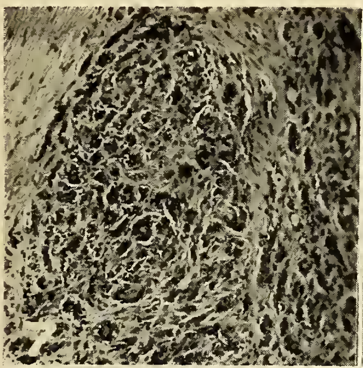
Fig. 4. Chronic fibrous mastitis with hyalinization of intralobular connective tissue.

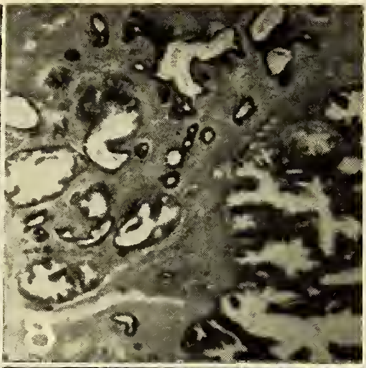
Fig. 5. Fibroadenoma with extensive intraductal hyperplasia of periductal connective tissue.

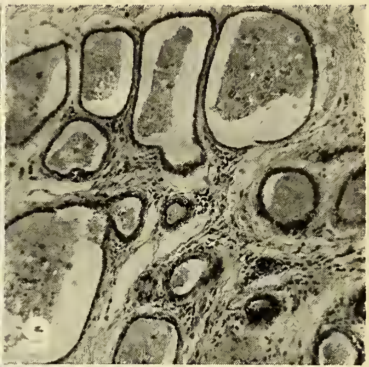
Fig. 6. Intraductal papilloma with the base of the papilloma visible.

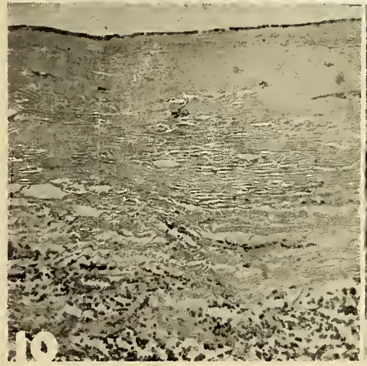
Etiology

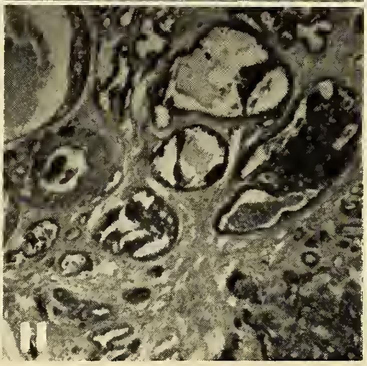
The principal etiologic theories of chronic cystic mastitis include: (1) secretory retention, (2) inflammation, (3) local tissue predisposition, (4) involution, and (5) endocrine. Although there is considerable disagreement as to the various etiologic factors and their importance, one can detect an unquestionable trend toward the acceptance of the endocrine theory and its relation to the various manifestations seen in this group of conditions. This is born out when we consider the following generally recognized features: (1) its absence before puberty, (2) its absence or disappearance after natural or artificial menopause, (3) its disappearance during pregnancy, (4) its common occurence in women without children, and (5) its least incidence among women with large numbers of children. Measurements of follicular and lutein hormones in women with breast lesions have shown decided variations from the normal in the hands of some authors. Geschickter[15] feels that there is an inbalance between the follicular and lutein hormones with a preponderance of the follicular hormone. Several authorities have reproduced the histologic manifestations of chronic cystic mastitis in different animals by the use of the various forms of follicular hormone.











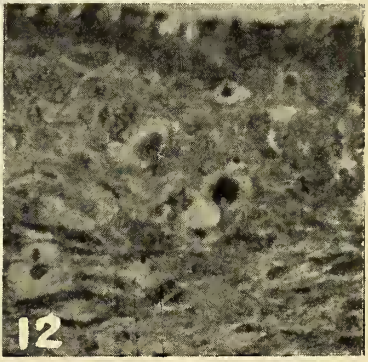


Fig. 7. Sclerosing adenoma with hyperplastic acini and periacinar connective tissue.

Fig. 8. Cystadenoma with much intraductal epithelial hyperplasia.

Fig. 9. Simple cystic mastitis small type with intraductal blood and cellular debris.

Fig. 10. Simple cystic mastitis large type with epithelial lining and thick hyalinized connective tissue wall with lymphocytic infiltration.

Fig. 11. Cystadenoma with fatal ductal cancer.

Fig. 12. Adenosarcoma with malignant transformation of the intralobular connective tissue. The benign ductal epithelium of the original fibroadenoma is visible.

Physiology

Dr. H. H. Joffe: A brief discussion of the physiologic changes which the mammary gland undergoes may help to clarify some of the puzzling problems associated with the involutionary or hormonal process of this condition. The correlation of estrin to the production of carcinoma will be discussed in another portion of this paper.

The morphologic appearance of the breast in its various stages of development and physiologic response bears an important relationship to certain pathologic states, and the breast, like the endometrium, is constantly undergoing periodic changes from birth to senility.

The breast of the newborn is characterized by few ducts, practically no acini and scanty periductal connective tissue. Epithelial proliferation, due to the presence of female sex hormone, may even resemble activity of lactation. After birth, the breast enters a quiescent period due to disappearance of the female sex hormone.[27]

As the result of ovarian activity at puberty, the breast enlarges with newly formed ducts and acini and hyperplasia of both the pericanalicular and periacinous connective tissue which may occasionally give rise to fibroadenoma. The ducts, at times, are dilated possibly due to colostrum and desquamated epithelium.[11,26,27]

According to Taylor[33], the painful breast exhibits an increase in the premenstrual vascular changes. This stage in the physiologic process is characterized by budding and new duct formation with epithelail activity and round cell infiltration.[26,27]

Lewis and Geschickter[21] examined forty-four pieces of tissue taken from breasts during operations for fibroadenoma and carcinoma at known intervals in the menstrual cycle and noted:

1. Expansion of ducts coincides with the rise of theelin in the blood.
2. Increase in acinar elements corresponds with the rise of progestin.
3. Menstruation was indicated and accompanied by round-cell infiltration and desquamation of duct

epithelium which coincides with the fall in both theelin and progestrin in the blood which occurs with menstruation.

4. Menstruation is followed by a short resting period with disappearance of round-cell infiltration, reduction in the size of the acini and a more compact stroma.

Rosenburg[29] found, on cut sections of breast and uterus on cases coming to autopsy, a corresponding similar sexual cycle in the mammary gland and endometrium which was confirmed by Pelmo and Sedening.[29] With the approach of menstruation, the cells lining the ducts become larger with branching new ductules and secretion into the ducts occurs. Involution begins a day or two before the onset of the flow, with degeneration and shedding which is comparable to the shedding of the superficial layers of the endometrium during menstruation.[29]

The source and nature of the impulse which produces the secretory or lactating breast, is a great controversy. It is assumed that the removal of the inhibitory factor of the placenta and fetus stimulates the breast to the secretory phase which is characterized by replacement of fat and connective tissue by enormous growth of ducts and acini with enlargement of lobule and hypertrophy of the epithelium.[26,27] The greatest physiologic change in the breast occurs during pregnancy in which, under the influence of corpus lutem, the epithelium grows at the expense of the connective tissue.[26,27] After pregnancy, the breast enters a state of rest but never completely returns to that seen between puberty and the first lactation.[11]

Lewis and Geschickter[21] studied seventeen specimens of breast tissue excised with different lesions during various stages of pregnancy and noted:

1. Rapid proliferation of glandular elements in the first trimester of pregnancy when progestrin is highest in the blood.

2. Maturation of cells of the ducts and acini with dilatation of lumina is most marked during latter half of pregnancy when secretory level of theelin is at its height.

3. Desquamation occurs in the latter half of pregnancy before lactation occurs.

The foregoing discussion clearly illustrates the almost unbelievable amount of both epithelial and fibrous changes that the normal breast undergoes during its various physiological phases from puberty to senility.

Clinical Recognition

The manifestations of chronic cystic mastitis are relatively few and because of the extreme variability of complaints, it is most difficult to make the diagnosis on symptoms alone. It, therefore, behooves surgeons and clinicians to fully appreciate the art of breast palpation.

The main clinical features may be summarized under the following headings:

1. Pain is the most constant complaint. It varies in intensity and is by no means present in all cases and is described as a diffuse aching which may increase in severity during menses. According to Rogers and Nathanson[31], pain and tenderness or both occurred in about one-half of their cases.

2. The hormonal dysplasias can occur at any age during the active sexual life of women but is most frequently between the ages of thirty-five to. forty-five years.

3. Nipple discharge occurs in a small per cent of cases and is not diagnostic. According to Cole[10], a discharge from the nipple will be noted in 5 per cent of cases. Lewis and Geschickter[21] state that 3 per cent to 7 per cent show a serous, milky, or bloody discharge. Martin[25] states that a serous or sero-sanguinous discharge is indicative of ductal papilloma, cancer, or chronic cystic mastitis. Approximately 50 per cent of the cases with bleeding were cancerous.

4. The physical findings vary somewhat depending upon the type of lesion. In the clinical classification already sited, the group of women with fibroadenomas will have a discrete, freely movable, firm, tumor mass. A second group of fairly young women whose chief complaint is pain may have an atrophic breast which on palpation has a diffuse, fine, granularity with a firm distinct saucer edge. There are no palpable discrete nodules. Those women at or near the menopause with discrete, rather firm to hard, isolated, freely movable nodules are likely to reveal blue-domed cysts. Aids to its recognition consist of transillumination and aspiration. A fourth division of women have coarse distinct nodules in various parts of one or both breasts. These may or may not be associated with pain. Resection of the involved parts reveals multiple cysts and histologically one or more of the several dysplasias, including varying degrees of epithelial hyperplasia and neoplasia, may be associated with the cysts.

Carcinogenesis

Dr. A. H. Wells: There is a great diversity of opinion regarding the anaplastic potentialities of chronic cystic mastitis and its various entities. These disagreements may be traced to: the small number and types of cases studied, methods employed, varied terminology used, and rarely pure prejudice. If there is a tendency for breasts with chronic cystic mastitis to develop cancer, it must be in a small percentage. Therefore, large numbers of cases must be studied to avoid statistical errors. Most authorities agree that those types with papillomatous hyperplasias in the ducts (Fig. 6) and adenocystoma (Fig. 8) have a greater cancerous potentiality than those with simple cystic change (Fig. 9) or fiibroadenomata (Fig. 5) or adenofibrosis (Fig. 3). For practical purposes, then, we must be able to predict the percentage of carcinomas to be expected in any one type of the hormonal dyscrasias.

The two methods of group study in common use include: (1) the anatomical association of chronic cystic mastitis in patients with cancer of the breast (Figs. 11 and 12) and (2) a follow-up study of surgical cases in which chronic cystic mastitis has been diagnosed histologically. The first method has been bitterly criticized by the opponents of a cancerous relationship. The latter method might well prove that 1 per cent of the entire group of patients with chronic cystic mastitis will develop cancer of the breast within a five- to ten-year period, whereas the expected incidence in the same age group of women in the general population is somewhat less than 0.5 per cent. When the various entities of chronic cystic mastitis have been studied over a five- to ten-year period in sufficient numbers (over 500 each), we are likely to find that the groups intraductal papilloma (Fig. 6) and adenocystoma (Fig. 8) when treated by simple local resection of palpable lesions may subsequently develop cancer in from 3 to 6 per cent of cases. If this prediction is true, the anaplastic potentialities of these lesions are in the realm of surgical significance. We anxiously await the future solution of this problem.

It should be noted that mammary carcinoma has been produced in experimental laboratory animals by the injection of estrogens.[1,14,17,20,21,22,26] These animals have developed in sequence the various histologic manifestations of chronic cystic mastitis with the ultimate transformation to carcinoma.

Treatment

Cancer is by far the outstanding disease governing the therapy of breast lesions. It represents about 25 per cent of the malignancies of women and is one of the most treacherous. If it were not for cancer, the therapy of the hormonal dysplasias would be of little practical importance outside of that for painful breasts and draining nipples. We are not qualified to enter the controversy of estrogenic versus testosterone or lutein hormone therapy for painful brests except to say that the question seems far from a settlement.

There are three rules regulating breast therapy. It cannot be too often repeated that a simple nodule in the breast is malignant until proven otherwise. A second safe rule is that if there is any question about the possibility of malignancy take a biopsy. The good surgeons of our acquaintance have about a 50 per cent batting average in distinguishing cancer of the breast from benign lesions. Furthermore, about 50 per cent of the biopsied lesions are malignant. A third rule which we advocate is that if the biopsy proves to be a malignancy of any type including the slower growing comedo, mucoid or papillomatous cancers, a radical resection is indicated. The patient's observations as to the duration of the disease are never dependable. The physician's clinical interpretation of axillary metastasis is wrong about as often as it is right.

In our opinion, the greatest problem of breast therapy confronting the surgeon and pathologist today is the question of the frequency of malignancy stemming from the hormonal dyscrasias (Figs. 11 and 12). If the implications of Geschickter's[15] follow-up of 192 cases of "adenosis" [Schimmelbusch's disease or adenocystoma (Fig. 8)] are correct, then 3 per cent of the patients with this condition will develop cancer in from five to ten years after a surgical excision. We disagree with his advice of conservative watching-and-waiting therapy. Why should a woman be made to bear the burden of chance with death when a bilateral simple mastectomy will remove this real danger? Can you imagine a physician taking a 3 per cent chance of dying in from five to ten years because he would not have his breasts removed by simple excision? Larger group studies of the incidence of cancer following local excisions of the various entities of chronic cystic mastitis are necessary before the facts will be known. Then it will be a matter of balancing cosmetic, functional values with surgical risks against the chances of an early death.

Summary

A brief review of the classification, etiology, physiology, clinical recognition, carcinogenesis, and treatment of the hormonal dyscrasias has been covered. (1) A simple working classification of chronic cystic mastitis using clinical as well as histologic criteria is preferable to the cumbersome listing of the many overlapping pathologic entities. (2) There is an unquestionable trend toward acceptance of the endocrine theory of etiology. (3) The normal breast undergoes an almost unbelievable amount of epithelial and fibrous change during its various physiologic phases from puberty to senility. (4) The clinical differentiation between benign and precancerous multiple breast nodules must be supplemented by biopsy. (5) Large group studies of the various entities of chronic cystic mastitis are necessary for the final proof of carcinogenic tendencies of the different types. (6) It is entirely possbile that adenocystoma (Fig. 8), and intraductal papilloma (Fig. 6) may have anaplastic potentialities of surgical significance. (7) The treatment of the hormonal dysplasias largely revolves about the differentiation from cancer and the possible precancerous nature of the various lesions of chronic cystic mastitis.

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Miscellaneous

CATARACT EXTRACTION UNDER SODIUM PENTOTHAL

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This report covers 100 consecutive cases of cataract extraction under sodium pentothal anesthesia.

While this may sound fantastic, we have not had a single unsatisfactory result. In no case has there been any nausea, nor has the use of oxygen, or any form of stimulation been necessary.

Old age, diabetes, hypertension, nephritis, et cetera, are no contra-indications to its use. There is a fall in blood pressure which in most cases is desirable. The average dose is from 1 to 2 grams—usually less than 1 gram. The patient, when told he will be asleep, loses practically all apprehension of the operation.

The detailed procedure is as follows:

At 9 p.m., the night before operation, the patient receives 1½ grains of nembutal, one hour before operation, another 1½ grains of nembutal, and one-half hour before operation, 1/100 grains of atropine subcutaneously. In the operating room 2 minims of 4 per cent cocaine solution is instilled in each eye, and a mydriatic of choice. The eye is then prepared for operation, and on its completion sodium pentothal is administered. The average individual counts up to about twenty when sleep is produced. If there is any reaction, such as a sneeze or spasm when the conjunctiva is grasped, we wait a few moments and push the sodium pentothal until relaxation is complete.

I find the advantages as follows:

The operator is very much at ease with no need to hurry, knowing full well that the patient will cause no trouble. Before the use of pentothal I was never satisfied with lid relaxation, even with lid injection of novocaine. Previously it was my routine procedure, in nearly all cases, to do a canthotomy. under this anesthesia, regardless of a deep set eye or narrow palpebral fissure, lid retraction is perfect, with most satisfactory exposure. There is no need of conversation with the patient who may be hard of hearing or speaks a foreign language, or of giving instructions which most patients do not follow or comprehend, anyway. As sleep is produced, dilation of the pupil is almost complete. A bridle suture is inserted, and the eyeball is fixed and remains so until the completion of the operation. Again I repeat, one may take all the time that is necessary. Any type of operation may be performed. The amount of pressure necessary to express the lens is entirely in the hands of the operator. In only three cases has any vitreous been lost. This procedure is ideal for intracapsular extraction. All of us have had patients who have been unruly, and for which they could not be blamed. This is eliminated. The patient is quiet on leaving the operating room, which is most desirable, and remains so from one-half hour to four or five hours.

The end result is the important thing, and under this procedure the results have been so much better than formerly as to leave no argument.

I have used sodium pentothal many times for other procedures. It is ideal for muscle operation, iridetcomy, enucleation, plastic surgery and even in mastoids.

My plea is—give sodium pentothal a trial.

X-RAY FILM OWNERSHIP AND USE

Not infrequently the question arises as to who has the right to an x-ray film—the patient, the roentgenologist or the referring physician or surgeon. Occasionally some ill feeling is engendered when a patient is denied a film for which he has paid and to which he feels entitled. More often the question arises as to the right of a physician other than the one originally referring the patient to the roentgenologist to view the x-ray film.

In deciding such questions, the patient's welfare is of the first consideration. It may be argued that what he purchases from the roentgenologist is his opinion, derived in part or entirely from the x-ray film and that the film is his roentgenologist's property.

The statement of policy adopted February 1, 1946, by the Board of Chancellors of the American College of Radiology for the guidance of raidologists and other physicians concerning the ownership and use of x-ray films seems worthy of general acceptance and is therefore reproduced herewith:

1. Roentgenograms should be used for the best interest of the patient.
2. The roentgenograms are the legal property of the radiologist or of the hospital in which they were made.[1] It is advisable, but not necessary, to mark on each film the statement, "Property of Dr. John Doe." Such a mark is particularly desirable if the radiologist delivers the films to the referring physician instead of filing them in his office or hospital department.

3. It should be the policy of the radiologist to make the films available for inspection by the physician who referred the patient for x-ray examination, along with a copy of the report of the radiologist. The best results are undoubtedly secured when it is possible for the radiologist and the referring physician to confer personally when the latter views the films.

4. If the referring physician or if the patient in behalf of the referring physician wishes to take the films away from the office or the hospital, it should be clearly understood that the films are "loaned" and should be returned after the loan has served its purpose.

5. If the patient dismisses the referring physician and goes to another physician, the films and the report should be made as freely available to the second as to the first physician who originally referred the patient. It is desirable that the patient notify the first physician of the change, and it may be assumed that he has done so, but even if this notification has not been made, the obligation of the radiologist is unchanged. When the second physician wishes to examine the films, it is assumed that he is doing so at the request of the patient.

6. If the referring physician objects to the submission of the films to the second physician or to the giving to the latter a copy of the radiologist's report, the radiologist is obligated to do so in spite of this objection. If the referring physician has possession of the films and refuses to release them, the radiologist, whose legal property they are, has the further right to take whatever action is necessary to get the films for the further benefit of the patient.

7. All films should be legibly and permanently marked so that the patient can be identified and the date on which they were taken can be determined. This is important because, under some conditions, a comparison of films just made with others made previously may be the crucial factor necessary to establish a diagnosis or to estimate the progress or regression of a disease.

8. When a medico-legal situation exists, the radiologist has a right to refuse to release the involved films if necessary for his own protection, except on a court order.

9. A liberal attitude regarding the release of films is more desirable than strict insistence on one's legal rights. It is better to run the occasional risk of losing films than to engender the enmity of a patient or of a physician by strict adherence to the rule, which in the past has led to attempts to make laws making the films the legal property of the patient.

10. In recognition of the universal importance of radiologic methods of examination, the principles regarding the use of roentgenograms outlined above are deemed by the American College of Radiology to be equally applicable to roentgenograms made by physicians other than specialists in radiology.

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[1] Whipple vs. Grandechamp, 158 N. E. 270 (Mass., 1927); Hurley Hospital vs. Gage, Circuit Ct. for Genesee County, Mich., April, 1931; McGarry vs. J. A. Mercier Co., 262 N. W. 296 (1931) 272 Mich. 501; Thocher vs. Barnum and Pinkham, Circ. Ct. for Ingam County, Mich., April, 1932; Lea vs. Otto, Mun. Ct. in City of Dayton, Civil Div., Aug. 4, 1932; Higgins vs. Lutheran Hospital Society of Southern California, Mun. Ct. of Los Angeles, Oct. 26, 1939; Hern vs. California Hospital and Snure, Superior Ct. of Cal. for City of Los Angeles (Case No. 461353), July 7, 1941; Spaulding vs. Bierman and Sinberg, Mun. Ct. of City of N. Y., Small Claims Part, Bor. of Manhattan, Nov. 23, 1945; Batchelder vs. Habershaw, Sixth District Ct. of R. I., January 7, 1946; 31 L. R. A. 283.

HYPERSENSITIVITY TO PENICILLIN

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mately three hours. For skin testing penicillin (commercial) of a different manufacturer was used, because none of the original batch of penicillin was available. Crystalline penicillin was not available for skin testing. Eleven days later, on January 31, 1946, an intradermal test with the same penicillin (commercial) was negative.

Summary

1. Two cases of hypersensitivity to penicillin (commercial) which bear a marked resemblance to the syndrome of serum sickness have been presented.

2. In both, the symptoms became evident after the cessation of penicillin therapy.

3. The symptom complex of generalized urticaria, elevated temperature, generalized adenopathy and polyarthritis or polyarthralgia, seen in serum sickness, was present in both cases.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from June Issue)

Unfortunately, the next chapters in the story have not been learned, but it seems a fair assumption that the organization maintained its existence by holding occasional meetings and electing officers. Only one specific reference to it has been noted, and that with regard to Dr. Milton A. Trow, of Chatfield, early in the second half of the nineties, when he was considering removal from Chatfield to Jackson, Minnesota, where he went in 1898 or early in 1899. In this period, when local adherents published a letter in praise of Dr. Trow, it was stated that "among the profession he is pre-eminent, stands at the head as President of the Fillmore County Medical Society; also is an officer and an active member of the Olmsted County Medical Society, as well as an honorary member of the Winona Medical Society." Record of the Fillmore County group, from that time until the merging of the Fillmore County Medical Society with the Houston County Medical Society, on May 2, 1904, has not been available. The late Dr. Hildus O. A. Nass, of Mabel, said: "To the best of my knowledge there was no Fillmore County Medical Society functioning in 1898, when I came here. I was a charter member of the Houston-Fillmore County Medical Society founded in 1904"; nor have other senior members of the profession of the county been able to recall activity of the society in the closing years of the century. The subsequent history of the two-county society through its merging with the Olmsted County Medical Society on November 14, 1932, and the joining of the three-county group with the Dodge County Medical Society on July 5, 1933, to form the Olmsted-Houston-Fillmore-Dodge County Medical Society was reviewed in "Notes on the History of Medicine in Houston County prior to 1900" (Guthrey).

Physicians of Fillmore County in the Minnesota State Medical Society.—Record of the individual activities of those early physicians of Fillmore County who were members of the county medical society and of the Minnesota State Medical Society is embodied generously in the transactions of the state organization. A few excerpts from the record are given or mentioned here. In the years from 1870 to 1875 pioneer members of the state society from Fillmore County were, in roughly chronological order of joining (most of them in 1870 and 1871), L. Redmon, W. P. Belden, R. W. Twitchell, A. H. Trow, M. Donnelly, C. H. Robbins, T. H. Everts, H. C. Grover, A. Plummer, R. L. Moore, A. F. Whitman and J. M. Wheat, the last of whom joined in 1875. Early in the eighties J. R. Johnson became a member and, in 1890, James H. Phillips and Milton A. Trow were admitted. In that long period from 1870 into the nineties, but particularly in the seventies and eighties, it was a rare meeting of the state medical society at which Fillmore County was not well represented, usually by more than one physician, in the offices, on standing committees and on special committees and in contributed reports to the committees. There frequently were contributions from R. L. Moore, T. H. Everts and H. C. Grover, C. H. Robbins and J. M. Wheat; and the range of subjects was wide: obstetrics and gynecology; surgery, general and special, including amputations; treatment of gunshot wounds and fractures; repair of hernias, inguinal and strangulated, cystic sarcocele and peroneal rupture; tetanus; ophthalmology; asthma; epidemics; and the use and abuse of alcohol.

Dr. Moore gave many and varied reports, always concise and well stated. In 1876, in discussing the value of ergot versus quinine in obstetrical cases, he said: "Ergot does do efficient service if the article is good and the patient a proper one for its use. Quinia sulp. cannot begin to take its place. I do not believe quinene (sic) to be much of an oxytoxic." A few years later, in reporting on fractures, he favored the use of plaster-of-Paris bandages in the treatment.

Drs. Everts and Grover, uncle and nephew, who for several years were in partnership, gave reports of surgical cases that were illustrative of the recurring problems of the time and, in 1874, one in particular "showing the excellent results from the use of carbolic acid as an antiseptic remedy in dressing wounds." When a Norwegian farmer was injured severely by the revolving tumbling rod of a threshing machine, the rod cut the sleeve of the left arm on the outside and in the winding and twisting process that followed the "attachment of the deltoid muscle apparently acted as a fulcrum, the head of the humerus was torn entirely free of all attachments and thrust quite through the integuments lying exposed in the axillary space. . . . We delayed a thorough examination until the counsel of Dr. Karl Bendixe (Bendeke) could be procured. . . . We unanimously decided upon exsection of the head of the humerus; which operation was readily performed and the ordinary amputating saw used as the bone was so completely free of all soft parts. The large cavity was filled with the following solution of carbolic acid: carbolic acid, 40 drops, alcohol, one ounce; aqu., three ounces. . . . The arm was then put upon a pillow in a natural position, so as simply to bring the edges of the wound together, no stitches or other retentive means were employed. The wound was kept wet and thoroughly injected with the acid mixture. The wound healed most kindly. . . . The patient is rapidly recovering the uses of a perfect arm except the power to elevate it to a right angle with the body. This may not be considered one of the lucky cases among the happy accidents of surgery only; but it shows the wonderful effect of carbolic acid as a dressing."

Dr. Grover, who in 1875 was a member of the state legislature, in that year discussed the need of a state home for inebriates and offered to introduce any bill or petition that the state medical society saw fit in furtherance of the object, and Dr. Everts, an ardent prohibitionist, subsequently took a positive stand in the movement to procure the home. Dr. Grover at this meeting also presented for the inspection of the society a bill that had been sent to a member of the house which should compel physicians to respond to every case under penalty of $5.00 in case of sickness and that when patients were unable to pay for the services of a physician, the county should be obliged to pay at the rate of 75 cents on a dollar; this was voted to be a curiosity. There was placed in Dr. Grover's hands at this meeting, to present to the legislature, the report of a special committee on fees which favored fixing the price of postmortem examination at $25.00 instead of $6.00.

In 1877 Grover and Everts together reported in detail thirty-seven obstetrical cases in only eighteen of which was labor normal, with the final comment: "The small total, and the unnatural proportion of unnatural labors, is accounted for by the fact that midwifery is here very largely in the hands of nonprofessionals.

We are only called in cases of 'scare' or real difficulty." In 1879 in reporting an obstetrical case that was complicated by "expulsion of uterine fibroid under action of ergot," Dr. Everts in his description included parenthetically the following bit which the standing committee on gynecology respectfully preferred to the committee on education. It is included here because it describes a type of practitioner too common in those years:

> The patient was under the care of a physician who had never had the benefit of sufficient medical education to distinguish between vagina and uterus, but was fully competent to furnish that moral support and encouragement which are so frequently all that is required to supplement the efforts of nature in giving to the parturient woman that "happy issue out of all her affliction" so properly prayed for. The days of constant, sleepless labor, growing hourly more painful without result had, however, exhausted the virtue of these remedies, though not by any means the "doctor's" assurance. He know nothing whatever of the actual state or progress of affairs, except that "the waters broke yesterday." Nevertheless, he confidently "reckoned that she would get along all right."

And one final comment from Dr. Everts in the same year, regarding a case of amputation of a hand, leaving the thumb, recalls the early faith in the salubrity of Minnesota's climate. "The rapidity and certainty with which wounds of all kinds heal in this country, we believe, will warrant far greater risks in the direction of conservative surgery than we are encouraged by eastern authorities to make."

Of this early group of physicians, Dr. Robbins expressed special interest in the incidence and severity of asthma. Dr. Wheat's chief and most detailed report was that of a "case of intra-uterine fibroid tumor and operation." He was assisted in the surgical procedure by Dr. H. H. Haskins.

From the late seventies to the turn of the century, although the Fillmore County Medical Society was revived in 1882 by the action of Dr. R. L. Moore, President, Fillmore County had a diminishing representation in the state medical society. In 1897 Milton A. Trow and James H. Phillips were the only members from the county, and in 1899 Dr. Phillips was alone; for the next four years there was none. Promptly after the formation of the Houston-Fillmore County Medical Society in 1904, the organization obtained its charter from the state society and once more names of men from Fillmore County (as from Houston County, which also had been in eclipse) appeared on the roster: F. A. Drake, F. A. Gowdy and A. P. Lommen, of the older group; and W. B. Grinnell, A. B. Hart, G. A. Plummer, G. R. Reay and C. N. Woodruff, who had settled in the county as the nineteen hundreds opened. In succeeding years new names from both senior and junior groups were added.

Fillmore County Eclectic Medical Society.—Any comment on medical societies in Fillmore County should include the story of the Fillmore County Eclectic Medical Society which came into being shortly after, and obviously because of, the legislation of March 9, 1869, the act which was designed by the Minnesota State Medical Society to regulate the practice of medicine in the state and to discourage practitioners who were not of the regular school.

In the *History of Fillmore County,* published in 1882, there appear these few lines about the local eclectic medical group:

> "FILLMORE COUNTY ECLECTIC MEDICAL ASSOCIATION: This society was organized on the 31st of July, 1869, at the office of Dr. O. A. Case in Preston. The first officers of the Society were O. A. Case, President; John A. Ross, George A. Love, J. J. Morrey. The organization kept up until 1876, when it was dissolved."

In the light of information gained recently, it appears that the society was organized some weeks earlier than stated in this excerpt; that although Dr. Case undoubtedly was the first president, Dr. Ross did not enter Fillmore County until the autumn of 1869; and that George A. Love, although in due time a member of the society, did not begin the study of medicine (with Dr. Ross as his preceptor) until 1870 and was not a qualified physician until 1874.

Extracts from the *Preston Republican* of 1869 are presented here because they give a record of the earliest transactions of the Fillmore County Eclectic Medical Society. In the issue of the newspaper of May 7, 1869, there appeared the following announcement:

> FILLMORE COUNTY ECLECTIC MEDICAL SOCIETY: A Medical Society meeting was held at Preston, Monday, May 3, 1869, at which were passed the following resolutions, viz:
>
> Resolved, 1st, that this society shall be known as the Fillmore County Eclectic Medical Society.
>
> 2nd, That any person duly qualified to practice medicine and surgery in all of their branches, and who can sustain a good and moral character, may become a member of the society.
>
> 3rd, That the society shall meet on the first Monday in each month for the promotion of its objects, and the transaction of business.
>
> 4th, That the object of the society shall be the improvement of its members, and the advancement of medical reform.
>
> 5th, That special meetings may be called by the President at the request of the members.
>
> 6th, That no amendment of the resolutions shall be made without a vote of two thirds of the members present.
>
> 7th, That the following bill of fees for medical services are unanimously adopted.

Counsel fee, or medical advice	$ 1.00 to $ 3.00
Each visit	.50 to 1.00
Each visit at night	1.00 to 2.00

If the distance exceeds one mile, mileage to be added at the rate of .50 per mile.

OBSTETRICAL OPERATIONS

Natural labor	5.00 to 10.00
Instrumental labor	15.00 to 30.00
Operations on the head and with trephine	15.00 to 25.00
Dressing each time	2.00
Miscellaneous, dressing cutaneous wounds, ulcerations, et cetera	2.00
Opening sinuses and abscesses	.50 to 1.00
Operations for hairlip	15.00 to 25.00
Extirpation of tonsils	8.00 to 15.00
Hydrocele, radical operation	5.00 to 25.00
Phimosis and paraphymosis	5.00 to 8.00
Paracentesis	5.00 to 12.00
Operation for fistula in ano	10.00 to 20.00
Reducing hernia	4.00 to 12.00
Reducing hernia by operation	25.00 to 60.00
Fracture of humerus and dressing	12.00 to 20.00
Other fractures and dressing	15.00 to 75.00
Dislocation, or fracture of fingers and toes, with dressing	3.00 to 5.00
Extirpation of encysted or cancerous tumors	2.00 to 20.00
Operation of lithotomy	10.00 to 100.00
Castration, complete	25.00 to 50.00
Castration, incomplete	10.00 to 25.00
Postmortem examination, where ordered by coroner	10.00 to 25.00
Examination of vaginum with speculum	2.00 to 4.00
Examination of lungs and heart with stethoscope	2.00 to 5.00
Malformation, operations for	10.00 to 40.00
Gonorrhea, simple	10.00
Syphilis	15.00 to 25.00
Operations for hemorrhoids	8.00 to 15.00
Amputations—the shoulder, hip, breast, leg or thigh, fore and back arm	25.00 to 100.00
Fingers and toes	4.00
Operation for aneurism	25.00 to 75.00

All other operations of complicated nature will be charged for according to the nature of the case.

On motion, the society adjourned to meet as per resolution.

J. W. Eighmy, Secretary O. A. Case, President

On June 11, 1869, in the *Preston Republican* appeared the following:

Medical notice: A meeting of the Eclectic Medical Society will be held at Preston, Minnesota, on Monday the 14th of June, 1869, to consider any business that may properly come before it. All physicians in good standing are requested to attend.

G. (sic) W. Eighmy, M.D., Secretary.

And in the issue of July 23, 1869, was the following:

MEETING OF THE FILLMORE COUNTY ECLECTIC MEDICAL SOCIETY: Pursuant to notice of July 1, 1869, the society met on the tenth at the office of Dr. Case in Preston, and was called to order by the President, when the following business ensued:

Applications for membership were presented to the president and several new members were admitted into the society.

Dr. Eighmy, Secretary, tendered his resignation, which was accepted, when Dr. Murray (Morrey?) was elected secretary by unanimous vote.

Dr. Wilson, President, appointed the following Board of Censors for the ensuing year: Drs. Thomas, Case and Eighmy.

Dr. Eighmy was elected Treasurer.

Dr. Case moved that an article of the *Chicago Eclectic Medical Journal* entitled "The action of mercury on the biliary apparatus" be read before the society. Dr. Murray was appointed to read the same.

Important and interesting topics were introduced relative to the history of reformed practice of medicine, compared with that of the "regular" heroic paracelsus, or allopathic practice, of which several members participated in discussion.

Dr. Wilson requested that the secretary forward copies of the proceedings to the county newspapers and to the *Chicago Eclectic Medical Journal.*

On motion the society adjourned to meet August 10, 1869, at 10 o'clock, a.m.

J. W. Eighmy

There will be a meeting of the Fillmore County Eclectic Medical Society in Preston, July 31st, 1869, at 10 o'clock, a.m. when a full attendance of the profession in good standing is requested. By order of the society.

Dr. Murray, President

It will be noted that H. Wilson, of Carimona, in 1866 one of the founders of the Fillmore County Medical Society, upon organization of the county eclectic medical society in 1869, transferred his allegiance. On February 14, 1870, when Dr. H. Wilson was president, a meeting of the eclectic society was held in Preston at the office of Dr. John A. Ross. In that spring notices appeared in county newspapers announcing the annual meeting of the Minnesota State Eclectic Medical Society in Owatonna on May 25. In July the Fillmore County Eclectic Medical Society met at the office of Drs. Case and Ross in Preston; all "professional brethren in good standing" were cordially invited to attend. There was promise that "notes on general practice, and so forth," would be read and that everything would be done to make the occasion profitable as well as pleasant. Dr. Case then was president and Dr. Ross secretary. By October Dr. Case was in Chatfield and the fall meeting was held in the office of Drs. Thomas and Case in that village. The last announcement observed was that of June 14, 1872, of the fifth annual meeting of the Fillmore Eclectic Medical Society at the office of Dr. Case, in Preston, on June 20, for the purpose of electing officers and the transaction of such other business as might be brought before the society. According to the *History of Fillmore County*, of 1882, this medical group disbanded in 1876. Subsequently some of its members became members of the Fillmore County Medical Society and of the Minnesota State Medical Society.

Public Health and Public Welfare

The employment of the supreme power of the state and nation for contending with the greatest of all human enemies, disease of body and mind, is a very modern practice. The

> care of the sick was formerly wholly the duty of the family and the neighborhood, under the counsel of physicians, who looked upon their patients—the word originally meant "sufferers"—as private clients. The earliest example of extra-home care was, no doubt, the relief and maintenance of the sick poor, always by local agents. The abating of nuisances injurious to health and comfort easily followed, and then quarantine against smallpox and other contagious disease. The Minnesota Code of 1851 authorized justices of the peace, village trustees, and city councils to exercise these functions. The General Statutes of 1866 made town supervisors local boards of health. The recognition of health as a matter of public concern, and of the authority of the state to prevent disease and promote general health was made by the legislature of 1872 upon the initiation of Charles Nathaniel Hewitt, M.D.
>
> Folwell: A History of Minnesota, 1926, vol. iv, page 413

In Fillmore County matters of public health and public welfare, including those mentioned by Folwell in the foregoing excerpt, have been from the first the concern of the county, the provisions of the law being carried out by the local boards and officers. A prefatory condensation will serve to list the offices maintained, a few of which will be considered further: A coroner has functioned in the county since 1856, although not until 1870 was record made of deaths and not until 1887 were full accounts kept. Records of naturalization, of intent and final, began in 1858, as did records of marriage. In the early years the poor, the sick and the handicapped received care from the overseers of the poor; in 1864 the overseer was calld the "poor master" and received $100 a year; in 1867 a poor farm was established. In that year also began official records of the insane, inebriate and feeble-minded. In 1870, in response to the law of 1869 creating a state bureau of statistics, were initiated detailed records of births.

The first coroner in Fillmore County and his immediate successor were laymen, as was usual in the early fifties; it was not until a few years later that the office became the accepted province of physicians. R. M. Foster served from October 8, 1856, to May 26, 1862, and W. D. Lipe held the office for the next two years. Since 1864 the coroner has been a physician, beginning with John W. Crees, who served from 1864 to 1865. Some of his successors served a few months, a year, a few years or several years, depending on the condition of their lives, inasmuch as in those decades there were many changes and removals. In chronological order the incumbents with their terms were: J. M. Wheat, 1865 to 1868; O. A. Case, 1868 to 1870; R. L. Moore, 1870 to 1872; J. G. Be(e)mis, 1872 to 1873; H. C. Grover, 1873 to 1880; J. H. Phillips, 1880 to 1887; H. H. Haskins, 1887 to 1889; H. Jones, 1889 to 1891; H. C. Grover, 1891 to 1892; J. H. Phillips, 1892 to 1895; A. W. Powers, 1895 to 1899; and F. A. Gowdy, 1899 to 1901.

In the early narratives of the county, and increasingly for several decades, there was reference to the attendance of physicians on paupers, who after 1867 were housed at the poor farm. In the *Preston Republican* of February 6, 1870, an official county newspaper, was the following item concerning certain little inmates of the poorhouse: "To the humane: Three likely infant boys, 2 mos., 3 mos., 13 mos. 2 without relations, for adoption. C. F. Holmes, Chairman, Board of County Commissioners." After 1866 there was occasional mention of the insane and their removal for institutional care at St. Peter, and in the seventies occasional reference to the inebriate and the feeble-minded. In 1883 there began in the county the official registration of physicians; in 1887 the recording of delinquent, dependent and neglected children.

Long before there was legislative movement to separate medical sheep from medical goats, action was taken in the interest of public welfare. It was realized early by physicians that misapprehension among the laity as to the care of premises required correction. In Fillmore County, beginning in 1857, notices in the newspapers gave evidence of the action of town boards and health officers in townships and villages in abating nuisances of filth, promoting sanitation and, as far as physicians' knowledge went, in protecting citizens from disease. Village boards of health were warning owners of grocery, stable, privy, sty or barnyard that they "must not allow any nauseous or unwholesome substances to accumulate," that the marshal might remove if the owner refused to abate such nuisances, and that fine for infringement would be $50.00; and that no carcass or offal from slaughtering was to be deposited on any land within the limits of the village. The idea of the average person, then and for more than twenty years afterward, was that causes of disease were local and personal and that by no means should the individual citizen be subject to public supervision and enforcement of sanitary measures.

In the same early period, conduct during illness also required correction and began to receive it. As Folwell said, "It was an ancient American assumption that every citizen had the right to decide for himself and for his dependents whether he or they were sick or well and, if they were thought to be sick, to employ as physician, any persons, without regard to special education for the healing art."

Fillmore County was fortunate even in the earliest years in having among its medical practitioners a group of capable and intelligent physicians well dispersed in the region who gave attention to the control of communicable disease. As various writers on the history of medicine in Minnesota have related, there were from time to time in the fifties a few cases of Asiatic cholera, a disease that was brought in by afflicted persons who came into the state on Mississippi River boats and that consequently occasioned greatest uneasiness in the counties that bordered on or were near the river. Early in September, 1866, the *Rochester Republican* cited the *Winona Republican* as having stated on September 4 that within the last four or five days some fifteen cases of genuine Asiatic cholera had occurred in the town of Rushford, Fillmore County, in five of which death had resulted. The disease supposedly had been brought in by a party of newly arrived Norwegian immigrants, who were the chief sufferers; only one of the resident "American" families had been attacked. "This unpleasant news suggests the propriety of the board of health in towns on public thoroughfares looking vigilantly to the protection of public health." There were from time of the earliest settlement of Fillmore County, sporadic outbreaks of scarlet fever, chickenpox, smallpox, measles and diphtheria. In 1858 there appeared in the *Chatfield Democrat* a notice typical of many items in papers throughout the county: "We have heard of several cases of smallpox within a few miles of our village recently, however we believe none have proved fatal. Vaccination is the only remedy for the disease. Dr. Potter, of Mantorville (Dodge County) has an excellent article of vaccine virus, and gives particular attention to all wishing to make themselves immune against this terrible malady." In the sixties, under conditions of increasing population, because of rising birth rate but particularly because of continuing settlement by immigration, there was an alarming increase in the incidence of communicable disease, with outbreaks of epidemic proportions from time to time. Whooping cough, scarlet fever and measles (and pneumonia), as one early physician of the county said, were seasonal in the spring; typhoid fever came as regularly as the autumn; and diphtheria and smallpox were to be feared at all times. In reminiscent and recorded accounts of the medical practitioners of the period in Fillmore County there are recurring references to these diseases and their ravages and to methods of treatment of patients.

(To be continued in August issue.)

President's Letter

ONE of the matters which caused the greatest controversy at the last meeting of the Association was the Emergency Maternity and Infant Care Program and its Minnesota list of consultants and specialists, popularly referred to as the *Blue Book.* It may be helpful to define the issues presented and to clarify some of the controversial points.

What are the facts regarding the issuance and distribution of the *Blue Book?* Children's Bureau Information Circular No. 1 stipulates that specialists who are certified by specialty boards, or physicians whose training and experience make them eligible for examination by such boards should be designated as consultants. For areas where consultants as described are not available, the State advisory committee should recommend a plan for providing consultation to patients. Furthermore, this circular stipulated that lists of physicians approved as consultants should be made available to all physicians participating in the program.

In an attempt to reconcile these Federal regulations with Minnesota medical practices, a recommendation as follows was submitted to the Children's Bureau: "Consultants shall include specialists certified by their respective specialty board, physicains whose training and experience meet requirements for specialty board examination, and also those physicians licensed in Minnesota to whom the patient is referred by the original attending physician." Three separate times this proposal was submitted to and rejected by the Children's Bureau. Finally, approval of the Children's Bureau was given to a plan of the State advisory committee to include as consultants: (1) diplomates of specialty boards or those eligible for examination, (2) physicians with University teaching appointments, (3) members of specialty organizations, (4) physicians with one year of specialty graduate training, and (5) other local physicians, under certain conditions.

At the meeting, four major controversial points were discussed. First, there was a great deal of confusion about the word "specialist." No distinction was made between specialist and consultant. Physicians participating in the program are of three categories, namely: physicians licensed by the Minnesota State Board of Medical Examiners, physicians qualified as described above as consultants, and physicians participating as specialists. The only difference between specialists and other physicians is in the size of the fee which is 50 per cent higher for specialists. Second, many believed the EMIC program requires that specialists perform almost all types of services. Actually, the program does not require that any service be rendered by specialists. Restrictions relating to general practitioners involve only consultation, major non-obstetric surgery, and care of the newborn during the first two weeks when the infant is referred by an obstetrician not providing such care. These services must be given by consultants if the physician is to be paid. Third, it was not clear that many qualified consultants are located in rural areas. Beyond this, however, was the lack of knowledge of the fifth criterion which states, "In those locations, and at those times when consultants as designated are not available within one hour of travel time, other local physicians may serve as consultants and receive a fee accordingly." And finally, there was misunderstanding concerning circularization of the directory. The State Board of Health, based on an understanding with the Association, supplies the book only to physicians licensed in Minnesota, and this policy has been strictly followed.

It is sincerely hoped that this information clarifies some of the misunderstanding. Already the case load in the program for the first four months of this year shows a 20 per cent decrease over similar months of last year. Might it not be best, for the short remaining life of the program, to accept humiliation and regimentation in order to see the work well done to the end?

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MINNEAPOLIS REGIONAL CHAPTER—AMERICAN COLLEGE OF PHYSICIANS AND SURGEONS

BEGINNING with a nucleus consisting of a few members of the medical staff of St. Barnabas Hospital in Minneapolis, who felt there was need of another organization within the Minnesota State Medical Association and the American Medical Association to assert the rights of general practitioners, the Minneapolis Regional Chapter of the American College of Physicians and Surgeons has been launched. Non-specialists from the staffs of nine other private hospitals in Minneapolis were added to those of St. Barnabas Hospital and an organization meeting was held May 17, 1946, at which the following officers were elected: President, Claude C. Kennedy; President-elect, Edgar W. Bedford; First Vice President, C. W. del Plaine; Second Vice President, George Fredericks; Secretary-Treasurer, O. A. Lenz; Board Members, H. D. Diessner and Frank Mach. The Minneapolis Regional Chapter, which includes Hennepin, Anoka, Carver, Wright, Sherburne, and Scott counties, offers to furnish to other eligible doctors in Minnesota, information which will enable them to establish similar regional chapters.

Articles of incorporation of the established chapter provide:

> The general purpose of this corporation is to provide an organization for the maintenance and betterment of service to patients and for the betterment of the scientific, economic and social standing of its members among their colleagues and patients. To that end, the corporation shall operate upon the premises (1) that all duly licensed physicians and surgeons are professionally honest until proved otherwise, are scientifically equipped to undertake the practice in which they are engaged, and have equal rights, privileges and responsibilities in the practice of their profession, (2) that no special interest group shall have the right to control or hamper the practice of any duly licensed physician or surgeon according to his judgment or to dictate or influence the treatment or the disposal of his patients or to deny him or his patients access upon an equal basis to physical facilities necessary or convenient to his practice and the treatment of his patients, and (3) that no political group by political means shall control the economic, social or scientific status of any duly licensed physician or surgeon.
>
> For the realization of the foregoing aims, ideals and objectives, this corporation may unite with similar corporations from other regions to form a Minnesota College of Physicians and Surgeons and to form an American College of Physicians and Surgeons.

As far as we can judge, the movement is a result of a feeling in certain quarters that general practitioners or those not certified by specialty boards are being discriminated against, that their activities in private hospitals are unjustifiably over-regulated, that they do not have equal opportunity for having their patients admitted to hospitals. Doubtless, the dearth of hospital beds has aggravated the picture. Another cause of discontent is the "Blue Book," a directory of consultants published by the Division of Hygiene, Minnesota State Department of Health, in connection with the Emergency Maternity and Infant Program. Objection is made that certain individuals are listed as available consultants, who should not be, and other names, which should be listed, are omitted. If the EMIC program ceases with the war's end, the matter loses importance. If not, it becomes of continued importance.*

If this discrimination is taking place and non-specialists are being obstructed in the practice of their profession, they have cause for grievance. On the other hand, the statement which appears in the above Articles of Incorporation, that all duly licensed physicians and surgeons have equal rights and privileges and responsibilities in the practice of their profession, is not strictly correct. The recent medical school graduate who has received his state license to practice medicine is not scientifically trained nor morally entitled to perform certain surgical and other procedures. This has been recognized for some time, and hospital staffs have recognized their responsibility in regulating surgical procedures within their walls. This has stimulated the urge for special training and certification by national specialty boards.

It is perhaps trite to state that the possession of a certificate from a national board is not

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*The reader is referred to the President's Letter in this issue.

prima facie evidence of ability or that lack of such certification indicates lack of ability. An arbitrary use of Board certification as a yardstick for hospital privileges is therefore a mistake. The medical staff of a hospital is in a position to know the ability of its members. The practice initiated in the Duluth hospitals, whereby inexperienced surgeons, for instance, are required to accept the assistance of more competent staff members for certain surgical procedures, seems a practical and happy solution in which co-operation and not antagonism rules.

It would seem that premise No. 2 in the above Articles of Incorporation maintains that no duly licensed physician or surgeon should be interfered with in the practice of his profession according to his own judgment. This would seem to be a declaration of opposition to regulation of hospital practice by hospital staffs. Until such time as certification by State Boards of Medical Examiners is altered to specify more specifically the field in which a licensed doctor is entitled to practice, it would seem that hospitals should continue to have some regulatory powers. Doubtless, such a change in the certification by State Boards of Medical Examiners would not be 100 per cent effective and would not relieve hospitals of their responsibility in this regard.

The formation of the American College of Physicians and Surgeons threatens to result in a division in the ranks of the medical profession which is to be deplored. We have always constituted a guild in which older members have been only too happy to assist younger and less experienced members in every way possible. It is to be hoped that any unjust treatment of nonspecialists by hospitals or specialists will be corrected in the interest of justice and harmony.

BENADRYL

BENADRYL is the name given to a drug synthesized and developed by the research laboratories of Parke, Davis and Company. It has been found to have antihistamine qualities to a marked degree and is relatively nontoxic.

A variety of clinical syndromes are due to the release of histamine in the tissues. Asthma may well be a manifestation of histamine action for histamine can produce a spasm of the bronchioles, an edema of their mucous membrane lining and an increase of mucus secretion from the mucous glands. The lesions of both acute and chronic urticaria, the cause of which is not known, can be reproduced by injections of histamine. The mucous membrane reactions of the respiratory tract present in hay fever and allergic rhinitis are likewise similar to histamine reactions.

Benadryl has been found to be of real clinical value in alleviating these conditions produced by histamine. It counteracts the vasodilatory action of histamine on the skin and mucous membranes. Although it has been shown to be fifteen to thirty times as effective as aminophyllin in relieving bronchial constriction, it has not proven very effective clinically in relieving asthma. Its sphere of real usefulness seems to be in the treatment of the symptoms of hay fever, vasomotor rhinitis and acute and chronic urticaria. According to one report, 69 per cent of hay fever sufferers have been markedly relieved and 90 per cent of those suffering from perennial vasomotor rhinitis. Similar satisfactory results have been reported in the treatment of urticaria.

Other properties of benadryl which may enhance its therapeutic value are its alleviation of smooth muscle spasm, its apparent reduction of stomach acidity and its relief of certain types of headache. Whether it will prove serviceable in the treatment of dysmenorrhea, peptic ulcer and the control of migraine remains to be seen.

Benadryl is a white crystalline powder, soluble in water and alcohol and is marketed in 50 mg. capsules and in an elixir, 10 mg. to the dram. Unfortunately, the supply of the capsules is limited. Intramuscular injection is quite irritating, while it can be given intravenously in 10 to 60 mg. doses in 100 c.c. of physiologic saline at a rate of 120 drops per minute.

The dosage of benadryl varies according to the individual. Some individuals may require twice the usual dose of 50 mg. three times a day. While it is effective in a high percentage of cases, it does produce the undesirable side-effects of drowsiness, dizziness and nervousness in a considerable number of individuals sufficient to contraindicate its use.

It would seem, however, from the reports that have appeared during the past year that benadryl promises to be a real addition to our armamentarium and that its field of usefulness may well be expanded beyond the symptomatic treatment of hay fever and urticaria.

THE THERAPEUTIC TRIALS COMMITTEE

THE Therapeutic Trials Committee is a new standing committee recently appointed by the Council on Pharmacy and Chemistry of the American Medical Association to encourage and aid sound research on medicinal agents for the preventive treatment or diagnosis of disease. The new committee of twelve includes those members not on the Council in addition to four ex officio members and employs a full-time secretary.

The Committee will initiate investigations of new products which in their opinion merit consideration, and will welcome suggestions. It will serve as a center for co-ordinating research and chemical trials to avoid duplication of effort. It may arrange conferences on therapeutic problems for exchange of information and ideas and in assisting clinical investigations. Before a product shall be subject to clinical trial, information must be available as to the nature, pharmacologic actions and toxic effects of the product. The Committee will then aid in securing co-operation between investigators and testing agencies such as hospitals.

This new Therapeutic Trials Committee will present a mechanism whereby new medicinal and biological remedies can be tried out and promptly evaluated. The profession not infrequently has its attention called by lay articles to new therapeutic remedies. Patients inquire about their value. Perhaps, as in the case of Anthallan, only one article has appeared on the subject in medical literature. It will be some time before such a product will have been sufficiently used to warrant its inclusion in New and Non-Official Remedies. In the meantime the physician would welcome reliable information as to its merits. This new committee should serve to expedite the evaluation of new remedies, and its establishment is to be highly commended.

OLIN WEST, PRESIDENT-ELECT AMA

Dr. Olin West, who resigned as Secretary of the American Medical Association April 1, 1946, following twenty-four years of service in that office, was elected to the office of Presidene-Elect at the recent annual meeting held in San Francisco. Dr. West will take office as President in 1947, succeeding Dr. H. H. Shoulders of Nashville, Tennessee, who assumed his duties as President this year.

DOCTOR OLIN WEST

To those who have had the privilege of knowing Dr. Olin West, for many years the Secretary and General Manager of the American Medical Association, his retirement on April 1, 1946, was a source of regret. He is a polished Southern gentleman and has always stood for the highest principles in Medicine in the strenuous years of service he gave to the national organization. It is with pleasure, therefore, that we reproduce the resolution passed by the House of Delegates of the Minnesota State Medical Association at the May, 1946, meeting and the reply received from Doctor West.

A Resolution

WHEREAS the Council and House of Delegates of the Minnesota State Medical Association are highly cognizant of the many years of loyal, energetic, effective and meritorious service rendered by Dr. Olin West on behalf of organized medicine, and

WHEREAS members of the Minnesota State Medical Association acknowledge with deep regret his resignation as Secretary and General Manager of the American Medical Association effective April first, leaving behind a record of more than twenty-three years of outstanding achievement, now be it, therefore

RESOLVED that a warm expression of appreciation for his unselfish and devoted service be conveyed to Dr. West on behalf of the medical profession of Minnesota, and be it further

RESOLVED that an Honorary Membership in the Minnesota State Medical Association be conferred upon Dr. West in recognition of his distinguished service in the field of scientific medicine, organized medicine and public health, and be it further

RESOLVED that the Secretary of the Minnesota State Medical Association be hereby instructed to transmit this commendatory resolution to Dr. West.

St. Paul, Minnesota
May 20, 1946.

June 10, 1946

R. R. Rosell, Secretary
Minnesota State Medical Association
My dear Mr. Rosell:

Your letter of June 7 and the enclosed copy of the resolution adopted by the House of Delegates of the Minnesota State Medical Association came to hand today.

I am deeply touched by the action of the House of Delegates and humbly but gratefully appreciate the signal honor conferred on me by my election to Honorary Membership in the Minnesota State Medical Association.

It has been a high privilege to be associated with the fine body of physicians throughout the United States who have given devoted service in the common effort "to promote the art and the science of medicine and the betterment of the public health." Among those who have served as members of official bodies of the Americana Medical Association and in other capacities there has been a goodly number of members of the Minnesota State Medical Association. They have served with distinction in promoting a great cause in their own state and in the Nation.

Please convey to the House of Delegates an expression of my grateful appreciation of the honor conferred on me which will grow and deepen through the years that may be left to me.

With heartfelt good wishes for the Minnesota State Medical Association and for its capable secretary, I am

Sincerely yours,
OLIN WEST

535 North Dearborn Street
Chicago 10, Illinois

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

STATE PHYSICIANS MUST CONTINUE TOLERANCE OF EMIC PROGRAM

The frequency and heat of the discussions of the EMIC program in Minnesota carried on at the various meetings and in hotel lobbies during the 1946 annual meeting would indicate that state physicians are vitally interested in the future of the program and critical of its operation.

Most condemned was the feature of the program known as the *Blue Book,* which lists consultants and specialists available for consultation by physicians attending cases eligible for benefits under the program.

A special meeting was held Sunday morning just previous to the annual meeting at which a careful study of all the facts bearing on the Emergency Maternal and Infant Care program in Minnesota was made by members of the Resolutions Committee, the Reference Committee on Miscellaneous Scientific Reports and the Medical Advisory Committee to the State Department of Health on the EMIC Program.

A report has been made by this committee of the findings, and this has been sent to the member doctors of the Minnesota State Medical Association.

Recommend Keeping Blue Book

Dislocation of the entire EMIC program would result with the discarding of the *Blue Book,* the study committee has concluded. The committee realizes that inequities exist; and while the present setup is not thoroughly satisfactory to anybody in the profession concerned, it is the best that can be arranged under the circumstances.

It is evident that the crux of the whole question is the inability of the attending physician to exercise his own choice of physician for consultation. This is the sore spot behind all of the opposition to the *Blue Book.*

When the EMIC program was set up, it was recognized that there would be certain inequalities and at that time the Medical Advisory Committee stated that it would deal with these as they occurred in an effort to correct them as quickly as possible. Ever since that time, the committee has held to that policy and three times has approached the Children's Bureau in Washington in an attempt to eliminate undesirable features. On each occasion its recommendations were turned down.

Before making any recommendations on the EMIC program, the members of the three committees studying the problem gave careful attention to the history and background of the whole program.

The law creating EMIC, passed March 18, 1943, and later signed by the President, set up the program for the duration of the emergency plus six months. Thus, the program is self-terminating and due to expire some time in the future.

Board of Health Co-operates With Doctors

In carrying out the EMIC program in this state, the Minnesota State Board of Health has consistently followed the policy of asking the Minnesota State Medical Association for recommendations before they have written anything into the state plan or adopted it themselves. The Board has even refused to discuss policies with authorities in Washington until the sanction of the State Association has been obtained. This was done because it was felt that the men who were going to do the work had every right to say how the program was to be set up.

At the outset of the program, in 1943, the State Board of Health went to the State Medical Association at its annual convention in Minneapolis and asked for comments relative to its operation in Minnesota. The Council at that time appointed a committee to study the matter. Recommendations were drafted by this committee which were approved by both the Council and the House of Delegates and turned over to the State Board of Health as a basis for putting the EMIC program into operation.

Ask Broad Definition of "Specialists"

With respect to consultation service, those first recommendations stated that consultants should be specialists who are certified by their respective American Boards *or those physicians whose training and experience meets the requirements of such boards* and that these physicians should be called in by the attending physician. In other words, it specified the diplomate because the federal regulations specifically designated them.

It also included any physician licensed in Minnesota who was called in by the attending physician. It left the choice of consultant with the attending doctor. This was approved by the Council and House of Delegates as stated, then turned over to the State Board of Health which submitted it to Washington, where it was refused.

In the meantime, the Federal Government approved *only diplomates* for consultant service and all during that period it was possible, therefore, to pay only diplomates. From this source has sprung most of the difficulty and controversy with respect to the operation of the program and the feeling that it is too strongly weighted to favor specialists to the extent that it has been labeled a "specialists' program."

Program Has Strong Patriotic Appeal

The study committee has pointed out that when the EMIC program first began to function, the demand for such a program created by its patriotic appeal, made it impossible for any medical association or health agency to refuse to co-operate on the basis of what would be looked upon by program-backers as mere inequities.

The adamant attitude of the federal government has put the health agencies on the spot—where they have had to do things they would not ordinarily do.

The point has also been raised that while the American Medical Association has representatives on the Advisory Committee of the Children's Bureau, it has at no time, officially as an organization, had the program submitted to it for comment or approval.

In its refusal to consent to abolising the Blue Book, the committee calls attention to several factors. If the *Blue Book*, or the consultants' service, were abandoned, the EMIC program would no longer be able to provide consultation services upon request of the attending physician nor would the EMIC program in Minnesota be able to provide non-obstetrical major surgery, although it would still be able to provide ordinary care.

Both Patient and Doctor Would Lose

If such special services could not be provided under the EMIC program it would mean that patients could not get full benefits and doctors would not get paid. The result of this, it can easily be seen, would be dissatisfaction on both sides, particularly on the part of the public which would not understand why the special services are not obtainable.

If the program is thus crippled because of lack of standards under which it can operate, what would be the final outcome as far as the physicians of Minnesota are concerned? Would a physician be enthusiastic about accepting cases under this program knowing that if complications should arise there would be no provision for consultant service?

Those charged with the responsibility of administering the program are far from satisfied with the present methods of operation in respect to the matter of the denial of free choice of physician for consultation, the committee has pointed out.

They are well aware of the justifiable complaints that have arisen in cases where a physician has been denied his fees and where a patient has got the impression that his doctor was not qualified to render proper medical service.

Errors on Both Sides

It must be kept in mind, however, that as in all large programs, errors will creep in and that they have been made on both sides—there are some physicians that have been designated as consultants who should not be so designated, just as there are others who should be, who have been overlooked.

Since the EMIC program is self-limiting and since the rapid demobilization of military forces will cause the program to decline steadily, the flaws in the program will in the near future disappear when the program itself is dissolved.

For these reasons, the doctors who studied the program are recommending that the profession forbear. It is the intent of the Advisory Committee and the Administrative Agency to keep hammering away in an attempt to get concessions that will permit the state plan to fit conditions in the state, fully recognizing the dangers inherent in the federalization of medical practice that causes local agencies to lose their sovereignty.

It should be evident to everyone that the program in Minnesota is functioning under limitations and handicaps set up by directives from Washington, and that the physicians are working under most difficult situations in an effort to meet the demand on the part of the public for this service.

OPTHALMOLOGY COMMITTEE FAVORS CREATION OF MINNESOTA "EYE BANK"

Minnesota may one day have a center for study and research on the corneal graft operation and perhaps for storing corneal tissue. Such was the anticipation of the State Committee on Ophthalmology in its annual report to the House of Delegates.

The report stated that during the past year there has been much publicity on the corneal graft operation, especially since the establishment in New York of "The Eye Bank for Sight Restoration, Incorporated."

This Eye Bank recently announced a new branch at Chicago with headquarters at Cook County Hospital, and it was the opinion of the committee that the Minnesota State Medical Association would do well to keep in step with this expansion and survey the existing situation in Minnesota, bearing in mind the possibility of establishing a clearing house or branch bank in this state at some future time.

The committee reported that the corneal graft operation has been performed in Minnesota by several well-known ophthalmologists in about twenty cases, with good takes—and ultimate good vision in about 35 per cent of the cases. The donor material was all taken from freshly enucleated eyes. While at present, the comparatively few cases performed in Minnesota do not call for more than the amount of fresh donor material available at any one time, the committee is looking ahead to the time when Minnesota by the establishment of a branch or clearing house at some centrally-located point, such as the University of Minnesota Hospitals, could teach the corneal graft operation and conduct research so that this state could contribute to the advancement of knowledge in this field.

SURVEY ON CHILD HEALTH SERVICES SOON TO GET UNDER WAY IN STATE

To formally introduce the citizens of Minnesota to the survey on child health services in the state which is soon to get under way, Dr. Roland E. Nutting, Duluth, state chairman of the Academy of Pediatrics, and Dr. Roger L. J. Kennedy, Rochester, chairman of the State Committee on Child Health, appeared on a radio broadcast at the time of the annual meeting with a summary of the work done on the project to date and information relative to the need and purpose of such a survey.

The House of Delegates has approved the plan for the review of child health facilities in this state and has voted to co-operate in every way possible with the American Academy of Pediatrics, which is supervising the individual state surveys seeking to determine hospital facilities available, community health services, both public and private, distribution and quality of professional personnel and pediatric education in state medical schools throughout the nation.

The State Board of Health has already allocated funds available under the federal social security act for the survey and Dr. Viktor O. Wilson, director of child hygiene, has accepted an invitation to direct the work of the survey.

The reason for the study arose from the realization that systematic planning by physicians themselves is necessary to provide adequate care for children who need it. The report will be used to evolve a program providing adequate pediatric care without resorting to "socialized" medicine.

Minnesota doctors will be hearing more about this survey as final plans take shape and the actual work of gathering the data is begun.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Pontiac, Michigan, Woman Forfeits $250 Bail in Duluth Basic Science Case

Re State of Minnesota vs. Mary Rakestraw

On May 6, 1946, Mary Rakestraw, thirty-six years of age, 703 Community National Bank Bldg., Pontiac, Michigan, forfeited bail in the sum of $250 when her case was called for trial in the District Court of St. Louis County at Duluth, Minnesota. The defendant was arrested at Duluth on October 1, 1945, and charged with practicing healing without a basic science certificate after she had inserted the following advertisement in the Duluth daily paper:

> CROSS-EYES
>
> Straightened—usually one office visit—safely, permanently; No cutting of muscles or cords.
>
> Personal Interviews Will Be Held from 10 A.M. to 7 P.M.
>
> HOTEL DULUTH—MONDAY, OCTOBER 1, 1945
> DULUTH, MINN.
>
> Come in and discuss your case. Complete information regarding methods, fees, etc. Illustrated literature free. No charge for interview.
>
> MARY RAKESTRAW LEAGUE FOR CROSS-EYE CORRECTION
> 703 Community National Bank Bldg.
> Pontiac, Mich.

The defendant admitted that she has no basic science certificate in the State of Minnesota, nor did she have a license to practice medicine in any state. It was pointed out to the defendant that she had no lawful right to interview or examine persons who were afflicted with any ailment, nor to give them advice. The defendant stated that she was receiving $6,000 per year for her services and that some of the persons with cross-eyes interviewed by her, were referred to an osteopath by the name of L. K. Mathews at Pontiac, Michigan, for operation. Following the defendant's arrest, she demanded a preliminary hearing which was held on October 31, before Judge Richard M. Funck of the Duluth Municipal Court. A witness for the State testified that he had consulted with the defendant in reference to his cross-eyes and that upon the recommendation of Mrs. Rakestraw, he went to Pontiac, Michigan, where he was operated on by Mathews. The witness testified that he paid Mathews $200 for the operation. The witness also complained that he was still cross-eyed after the operation. Following the testimony at the preliminary hearing, Judge Funck expressed the opinion that the defendant's activities were in violation of the laws of Minnesota and ordered the defendant held for trial in the District Court, bail being fixed in the sum of $1,000 cash, which was furnished.

When the case was called at the November term of Court, it was passed until the January, 1946, term because one of the attorneys for the defendant was engaged in business oustide of the State. The matter was again continued because of the illness of the defendant, and, meanwhile, an application was made by the defendant to have her bail reduced. With the approval of the County Attorney and legal counsel for the Minnesota State Board of Medical Examiners, the bail was fixed in the sum of $250, which the defendant forfeited by her nonappearance when the case was called for trial on May 6. The Court also ordered a writ of attachment to issue for the defendant. Legal counsel for the defendant stated that she would not again attempt to carry on her activities in the State of Minnesota.

Saint Paul Abortionist Sentenced to Eight-Year Prison Term

Re State of Minnesota vs. Arthur N. Alexander
Re State of Minnesota vs. Joseph Schmolke

On June 3, 1946, Arthur N. Alexander, fifty-four years of age, 78 North Smith Avenue, Saint Paul, Minnesota, was sentenced by the Hon. Albin S. Pearson, Judge of the District Court of Ramesy County, to a term of not less than two, nor more than eight years at hard labor in the State Prison at Stillwater. The sentence followed Alexander's plea of guilty to an indictment by the grand jury of Ramsey County charging him with the crime of abortion performed April 2, 1946, on a twenty-seven-year-old married Saint Paul woman. On the same day, Judge Pearson sentenced the defendant, Joseph Schmolke, fifty-two years of age, 78 No. Smith Avenue, Saint Paul, Minnesota, to a term of not to exceed four years in the State Prison at Stillwater, following Schmolke's plea of guilty to an indictment charging him with the crime of abortion in the same case. Judge Pearson upon the recommendation of the County Attorney of Ramsey County stayed Schmolke's sentence and placed him on probation for four years, but ordered Alexander taken to the State Prison to serve his sentence. Alexander's sentence is double the statutory sentence for abortion due to the fact that Alexander, in December, 1939, was convicted in the District Court of Hennepin County, of the crime of abortion.

Alexander and Schmolke were arrested on May 11, 1946, by Saint Paul police officers following the death earlier the same day, in a Minneapolis hospital, of an eighteen-year-old, unmarried Minneapolis girl upon whom, it is alleged, a criminal abortion had been performed. Evidence was obtained that the girl was taken to Alexander for an abortion on May 6, and that Alexander was paid $100 for his services. The grand jury of Ramsey County indicted Alexander on May 13, 1946, for manslaughter in the first degree in connection with the death of the Minneapolis girl. At the same time the grand jury indicted Alexander and Schmolke in a joint indictment for doing an abortion on the Saint Paul woman. In view of the fact that Alexander had a previous conviction for a felony, he was permitted to plead guilty to the abortion indictment instead of the manslaughter indictment, receiving a double sentence. On motion of the County Attorney, Judge Pearson ordered the manslaughter indictment held in abeyance upon the condition that after Alexander has served his prison sentence, he is to reside permanently outside of Ramsey and Hennepin Counties. If Alexander fails to comply with this condition, the State will be permitted to re-instate the manslaughter indictment upon the calendar for trial. Alexander was formerly licensed to practice chiropody in the State of Minnesota, but had his license revoked in 1935, when he was convicted of practicing healing without a basic science certificate. In December, 1939, Alexander was sentenced to serve two years in the State Prison at Stillwater following his conviction in the District Court of Hennepin County of the crime of abortion. Schmolke stated to the Court that he formerly lived at Saint Cloud and did common labor.

The prompt arrest of Alexander and Schmolke resulted from the splendid co-operation of the Police Departments of Minneapolis and Saint Paul, both defendants being in jail within eight hours after the death of the Minneapolis girl. Notwithstanding the fact that the death occurred on a Saturday, evidence was obtained over the week end that enabled Mr. James F.

Lynch, County Attorney of Ramsey County, to present he case Monday morning, May 13, to the grand jury or an indictment. Judge Pearson set bail in Alexander's case at $11,000 and at $5,000 for Schmolke, resulting in both defendants' remaining in custody until their leas of guilty were entered.

Minneapolis Court Issues Warrant for Arrest of "Internationally Known Health Lecturer"

Re State of Minnesota vs. Leon Antony Sceblo, alias Dr. Leonid De Seblo

On June 8, 1946, a complaint was filed in the Municipal Court of Minneapolis charging Leon Antony Sceblo, alias Dr. Leonid De Seblo, who gave his home address as 317 South Bonnie Brae, Los Angeles, California, with practicing healing in violation of the Minnesota Basic Science Law. A warrant was issued for the arrest of the defendant and is in the hands of the Minneapolis Police Department for service.

De Seblo registered at a Minneapolis hotel on March 29, 1946, and stated that he came to Minneapolis from Milwaukee, Wisconsin, and previous to that had been in Omaha, Nebraska. On April 6, 1946, postal cards were mailed out from Minneapolis representing De Seblo as being a doctor and an authority on "craniopathy, endocrine glands, old age, diet and nutrition, cosmic rays," et cetera. The postal card also represented that the defendant was an authority on the pituitary, pineal and thalmic glands and was able to advise the public on

> "how to avoid Insanity, Inferiority Complex, Subnormal Mental States, Nervous Ailments, Eye Troubles, Rheumatism, High Blood Pressure, Heart, Skin and all other mental and physical disorders."

The postal cards also announced that De Seblo would give two lectures April 11 and 12 in Minneapolis. Representatives of the Minnesota State Board of Medical Examiners and the Minneapolis Police Department were present at De Seblo's lecture on April 12, during which lecture, De Seblo discussed vitamins, craniopathy, cosmic ray and other matters. He also announced that he would conduct a health course lasting three days and the cost would be $25.00 per individual. At the conclusion of the lecture he was instructed to report to headquarters of the Minneapolis Police Department the following morning at 9 o'clock. He failed to make his appearance and subsequent investigation disclosed that he checked out of the hotel at about 7 A.M., April 13. De Seblo also admitted that he had no license to practice any form of healing and that he had never obtained a degree in medicine nor any other legally recognized branch of the healing arts.

* * *

Minneapolis Orderly Pleads Guilty to Violating Basic Science Law

Re State of Minnesota vs. Frank Herman Gold

On June 12, 1946, Frank Herman Gold, twenty-nine years of age, 4148 Elliot Avenue South, Minneapolis, was sentenced by the Hon. Lars O. Rue, Judge of the District Court of Hennepin County, to a one-year term in the Minneapolis Workhouse, following Gold's plea of guilty on May 21, 1946, to an information charging him with the crime of practicing healing without a basic science certificate. Judge Rue stayed the sentence and placed the defendant on probation for one year on condition that Gold absolutely refrain from practicing healing in any manner in the State of Minnesota, and upon the further condition that he be not employed, in any capacity, by any hospital.

Gold was arrested on May 18, 1946, by Minneapolis police officers following an investigation that disclosed that Gold, who was employed as an orderly by a Minneapolis hospital, was representing himself as a physician and surgeon. Gold's activities came to the attention of the Minnesota State Board of Medical Examiners because of inquiries made by prospective patients in Minneapolis concerning Gold. Gold had also been under investigation by the Saint Paul Police Department because of representations made by Gold in Saint Paul that he was a doctor and on the teaching staff of the University of Minnesota. Gold admitted in Court that these representations were false, and upon being questioned by Judge Rue as to why he resorted to such falsehoods, explained to the Court that he was trying to "build" himself up and to be a "big shot." After being in jail for twenty-five days prior to being sentenced, Gold told Judge Rue that he had learned his lesson. Gold also stated to the Court that he was born in New York City, and prior to coming to Minneapolis had been employed as an orderly in a New York City hospital. Gold also admitted that he had attempted to change his name to "Gould" and had used that name at various places in Minneapolis.

CLINICAL-PATHOLOGICAL CONFERENCE

(Continued from Page 699)

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WOMAN'S AUXILIARY

Mrs. Edward V. Goltz, *President*
Saint Paul, Minnesota
Mrs. John K. Butler, *Editor*
Carlton, Minnesota

Executive Board

The annual meeting of the executive board of the State Medical Auxiliary was held on Monday, May 20, at the Minnesota Club. Mrs. E. V. Goetz, president, presided.

At the general meeting held on Tuesday, several problems were discussed and handled. Mrs. Melvin S. Henderson of Rochester assumed office as the new president. At the luncheon at the Lowry Hotel, Dr. George M. Curtis of Columbus, Ohio, was guest speaker. A style show was put on by Field Schlick and Company. Other state officers elected were: Mrs. J. A. Thabes, Brainerd, president-elect; Mrs. Harold Wahlquist, Minneapolis, Mrs. M. J. Gillespie, Duluth, Mrs. Mark E. Ryan, Saint Paul, and Mrs. E. J. Simon of Swanville, vice presidents; Mrs. George Penn of Mankato, treasurer; Mrs. H. W. Satterlee of Lewiston, recording secretary; and Mrs. R. N. Jones of St. Cloud, auditor.

Blue Earth

Blue Earth Auxiliary met at Point Pleasant, Madison Lake, May 27, with the Medical Society. Dr. Arthur B. Hunt from the Department of Obstetrics and Gynecology of the Mayo Clinic spoke on "Anesthesia and Analgesia in Obstetrics and the Rh Factor." The new officers are Mrs. Bradley Troost, Mrs. George Penn, Mrs. Walter B. Kaufman and Mrs. John C. Mickelson, all of Mankato.

Hennepin

Mrs. J. M. Neal was installed as president at the annual meeting, May 3, at the Woman's Club. Mrs. Frederick Schaaf is president-elect. Mrs. Cecil J. Watson and Mrs. F. S. McKinney were the chairmen in charge of the luncheon and hospitality.

Mrs. Daniel B. Mork writes of a small group within the auxiliary which has organized a speech club. They meet monthly and at a recent dinner meeting at the home of Mrs. Mork, Dr. Peter Schultz, husband of one of the member's, entertained the group afterwards with his war experiences. Mrs. Joe Neal, the new president, was the honor guest. Such a group offers incentive to others to stimulate closer friendships among doctors and their wives.

Olmsted-Houston-Fillmore-Dodge

Mrs. M. S. Henderson of Rochester, new state president, was hostess to her County Auxiliary on May 1. Officers for next year will be Mrs. M. S. Merritt, Mrs. E. V. Allen, and Mrs. F. M. Feldman, all of Rochester.

Renville

The Medical Society and the Auxiliary met at the Olivia Sweet Shop on Tuesday, May 14, for dinner. Officers for 1946-47 are Mrs. Ralph Erickson, Hector, Mrs. J. Cosgriff, Olivia, and Mrs. P. Johnson, Bird Island.

Park Region

Mrs. P. Boysen reports the new officers of the Park Region Auxiliary to be Mrs. E. A. Herberg and Mrs. H. B. Thompson, both of Fergus Falls.

St. Louis

On May 7, Dr. Myron Weaver talked at an open meeting sponsored by the Auxiliary. Mrs. R. M. Mayne assisted Mrs. A. J. Bianco in making the arrangements. On May 14 at the annual meeting held at Northland Country Club, Mrs. Henry Bakkila was installed as president and Mrs. S. M. Litman was made president-elect. Mrs. G. A. Hedberg, retiring president, summarized the year's activities. The new officers will be Mrs. H. E. Bakkila, Mrs. Roy Pederson, Mrs. Ralph Eckman, Mrs. D. W. Wheeler, Mrs. T. O. Young and Mrs. John K. Butler.

Stearns-Benton

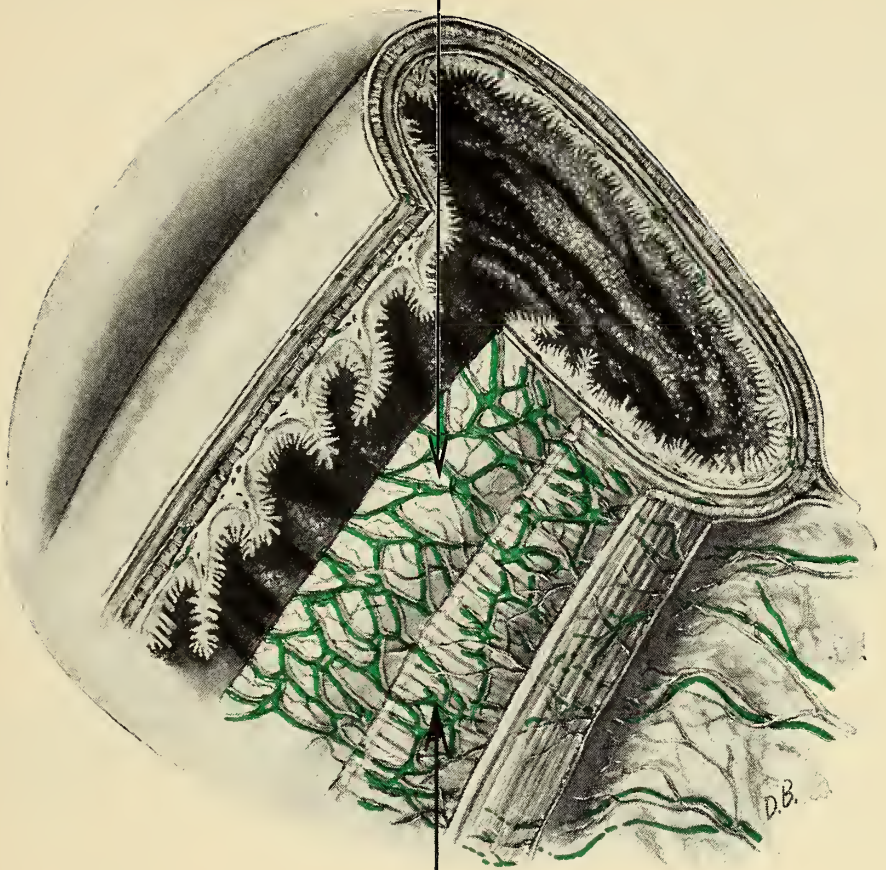
A Dutch treat dinner at Hays Hostess House on May 14 was the scene of the annual meeting of the Stearns-Benton Auxiliary. Officers are Mrs. S. J. Raetz, St. Cloud; Mrs. L. M. Evans, Sauk Rapids; Mrs. J. J. Gelz, St. Cloud, and Mrs. F. W. Hovorka, St. Cloud. Mrs. R. N. Jones is publicity chairman.

Washington

Mrs. F. G. Landeen of Stillwater was hostess on May 14 to the Washington County Auxiliary. The annual reports were given and the following elected to office: Mrs. F. A. Stevens, Lake Elmo; Mrs. F. M. McCartin, Stillwater; and Mrs. Russell Carlson, Stillwater.

Winona

Mrs. William Heise of Winona, new president of the Woman's Auxiliary, will be assisted in her duties by Mrs. J. Hamlin of St. Charles, Mrs. Lewis I. Younger and Mrs. A. E. Meinert of Winona.



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In Memoriam

NORMAN E. ANDERSON

Dr. Norman E. Anderson of Harmony, Minnesota, passed away June 12, 1946. He and his son had returned from a week-end visit in Minneapolis and death came suddenly. He had been living with his son since his wife's death, February 2, 1946.

Dr. Anderson was born in La Crosse, Wisconsin, March 5, 1881. He was a graduate of the College of Physicians and Surgeons, University of Illinois, in 1903. He interned at St. Francis Hospital in La Crosse. After his marriage to Clara Hanson Kjose on November 30, 1904, he practiced a short time in Mondovi, Wisconsin. In December, 1906, they moved to Harmony.

Dr. Anderson served the people of the community faithfully and was always ready to respond to calls, irrespective of time or weather. He was a member of the Commercial Club for many years and served on the School Board a number of years. He was a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

He is survived by a son, Dr. U. S. Anderson of Minneapolis; two daughters, Mr. Arthur Kerkhof and Mrs. Wendell Boice, both of Minneapolis; his mother, Mrs. N. A. Anderson of Sioux Falls, South Dakota; three sisters, and two brothers.

GEORGE L. JOHNSON

Dr. George L. Johnson of Newfolden, Minnesota, died at the University Hospital, Minneapolis, on April 19, 1946, at the age of sixty-nine.

Dr. Johnson was born December 10, 1876, near Cannon Falls, Minnesota. He attended Carleton College and graduated from Marquette Medical School in Milwaukee in 1910. He began practice at Newfolden the following year and had practiced there continuously since that time with the exception of a period during World War I when he served in the Medical Corps as Lieutenant Colonel.

He served one term as a representative from Marshall County in the State Legislature and had filed as a candidate for the Legislature this year.

Dr. Johnson was a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations.

He is survived by three brothers, Frank and Reuben of Cannon Falls and North of Bay City, Wisconsin.

ROY K. KENDALL

Dr. Roy K. Kendall, son of Dr. and Mrs. E. C. Kendall of Rochester, Minnesota, died March 13, 1946, in Miami, Florida, at the untimely age of twenty-seven.

Roy Kendall was born in Rochester, December 7, 1918. He attended Rochester High School and graduated from Carleton College in 1940. He received his M.D. degree from Harvard Medical School in December, 1943.

Dr. Kendall then accepted an internship in Children's Hospital, Boston, but because of poor health was obliged to terminate this appointment after three months. For an interval of five months during 1944 and 1945 he assisted Dr. Lambertus Wormolts in Oregon, Illinois, and then completed the year's work as an interne at Jackson Memorial Hospital, Miami.

He received his license to practice medicine from the Florida state board of licensure in January this year and from then until his untimely death was associated with Dr. S. E. Chambers in Miami. Although the opportunity to work in the field of clinical medicine was brief, Dr. Kendall clearly demonstrated unusual ability in regard to both the art and science of medical practice, his associates said.

In January, 1944, Dr. Kendall married the former Jeanne Nettz of Dixon, Illinois. He is survived by his wife and son, Stewart, his parents, a brother, Hugh Kendall of Rochester, N. Y., a brother, First Lieutenant Norman H. Kendall, and a sister, Elizabeth, a student at Carleton College.

THOMAS F. QUIMBY

Dr. Thomas F. Quimby of Minneapolis, oldest member of the Hennepin County Medical Society, died June 30, 1946, at the age of ninety-one.

Dr. Quimby was born in Biddeford, Maine, May 10, 1855. He attended Exeter Academy and Union College, Schnectady, New York, before receiving his M.D. degree from the College of Physicians and Surgeons in New York City in May, 1878. For two years following graduation, he attended the University of Heidelberg, Germany, and in 1880 began the practice of medicine in Minneapolis.

Dr. Quimby was Health Officer for three years and a member of the Board of Education for twelve years. He was also local surgeon for the Soo Railway for a time.

C. B. WRIGHT

Lt. Commander C. B. Wright, son of Dr. Charles D. Wright, of Minneapolis, died of poliomyelitis at Key West, Florida, on June 25, 1946. At the time of Commander Wright's death, Mrs. Wright was also seriously ill with poliomyelitis.

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◆ Of General Interest ◆

Dr. John Melby Grogan, formerly of Wadena, has opened offices for general practice in Ceylon.

* * *

Dr. Wayne W. Canfield has returned to Houston and resumed his practice there.

* * *

Dr. Harry W. Morcom, who has been practicing at Badger for the past two years, has closed his offices and is moving away.

* * *

Dr. Hill, who was a platoon commander, enlisted on July 6, 1942, and returned to his duties at the Clinic in January, 1946.

* * *

Announcement has been made of the appointment of Dr. A. Carlyle Tingdale, Hibbing health officer, to the Hibbing Infantile Paralysis Board.

* * *

Dr. Charles Mayo participated in the round-table conference of the Department Rehabilitation Committee of the American Legion held in Saint Paul in June.

* * *

Dr. Donald C. Anderson is now located in Lamberton where he has taken over the practice of Dr. Edward M. Anderson, who has accepted a fellowship at the University of Minnesota.

* * *

The Bronze Star Medal has been presented to Dr. John R. Hill, Mayo Clinic, "for meritorious service in direct support of combat operations from October 21, 1944, to May 8, 1945, in Belgium and Germany."

* * *

Major Peter J. Schultz, who was home on terminal leave in May, will resume his practice in Richfield sometime during the summer. Major Schultz' military assignments included service in France and Germany.

* * *

Dr. George Freeman, superintendent of the State Hospital at St. Peter, was a guest speaker at the annual dinner meeting of the Blue Earth County Public Health Association. Dr. Freeman's subject was "Care of the Senile."

* * *

Dr. Gordon B. New, Mayo Clinic, presented a paper illustrated by motion pictures on "Further Use of the Sickle Flap," at the meeting of the American Association of Plastic Surgeons held recently in Toronto, Canada.

* * *

At the meeting in Atlantic City recently, Dr. Cecil J. Watson, Professor of Medicine, was elected President of the Society for Clinical Investigation and also Recorder and member of the Council of the American Association of Physicians.

After six years of residence in Alden, Dr. John P. Person has moved to Albert Lea, where he has purchased a home on Fountain Street near the Naeve Hospital. Hereafter, Dr. Person will be in his offices in Alden part time.

* * *

Dr. Adlai A. Brink has returned to his practice at Baudette after an absence of some months. While away Dr. Brink took a special course of study at Cook County Hospital in Chicago and also spent some time in observation at the hospitals in Rochester.

* * *

Dr. Simon D. Wolstan has resumed his medical practice in Minneota after an absence of thirty-two months in the armed forces. A captain in the Army Medical Corps, Dr. Wolstan's assignments included a year in the Pacific Theatre.

* * *

Major A. B. C. Knudson, formerly of Minneapolis, has been discharged from active military service and has been appointed Assistant Chief of Physical Medicine Division in the Department of Medicine and Surgery of the Veterans Administration, Central Office, Washington, D. C.

* * *

Dr. John S. Lundy and Dr. Charles L. Adams, Mayo Clinic, attended the meeting of the American Society of Anesthesiologists held in New York City. Dr. Lundy, who is president of the Society, also stopped off in Detroit during the same week, where he addressed the staff of the Grace Memorial Hospital on "The Use of Curare in Anesthesia."

* * *

The three regional meetings of the Morrison County Medical Care Plan held at Little Falls, Randall and Pierz, were addressed, respectively, by Drs. Albert A. Amundsen, W. S. Knight, and Raymond T. Healey.

The plan, which has been in operation in the county for the past four years, has attracted nationwide attention.

* * *

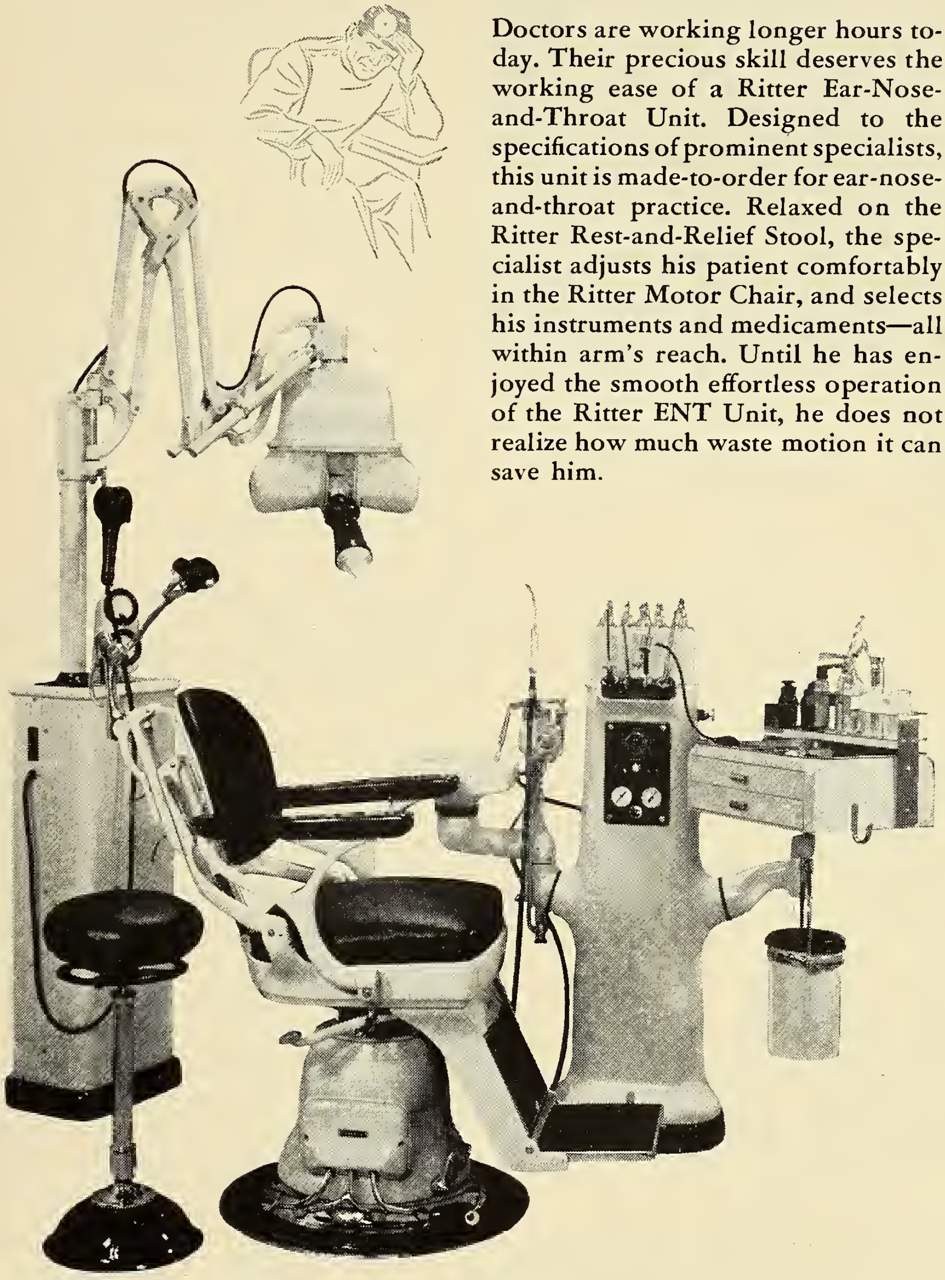
Roy T. Pearson, recently released from military service, has joined his brother, Dr. Bror F. Pearson in the practice of medicine at Shakopee. A 1944 graduate from the University of Minnesota, Dr. Pearson served his internship in a naval hospital, then, with the rank of lieutenant, he was assigned to duty in the South Pacific.

* * *

Dr. Bernard Street, who was in charge of the practice of Dr. Joseph Mose, in association with Dr. Warren E. Wilson in Northfield while Dr. Moses was on an extended vacation, has opened offices at St. Cloud.

(Continued on Page 724)

This Equipment Conserves Specialists' Energy



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(Continued from Page 722)

In addition to carrying on his private practice, Dr. Street will also serve as chief surgeon at the State Reformatory. Prior to four years of military service, Dr. Street was in practice in St. Cloud.

* * *

In honor of the completion of Dr. William Friesleben's thirty-ninth year of practice at Sauk Rapids, a public celebration of "Dr. Frieselben Day" was held at the Municipal Park on June 30.

Dr. Friesleben, a native of Livingston County, Illinois, came to Sauk Rapids immediately following his graduation from the University of Cincinnati, Ohio.

* * *

Dr. James E. Murphy, who was in practice at Whitefish, Montana, before his entry into the Army Medical Corps five years ago, has joined Dr. Leslie M. Evans in practice at Sauk Rapids. Dr. Murphy was born in Minneapolis and graduated from the University of Minnesota Medical School. For the greater part of his military service he was stationed in the South Pacific, but recently he was a member of the staff of the Veterans Hospital in Montana.

* * *

The appointment of Dr. Alcibiade A. Giroux as health officer of North Mankato to succeed Dr. Helmer J. Nilson, has been announced by the city council.

Despite reports to the contrary, Dr. Nilson does not intend moving away from North Mankato. In discussing his resignation as health officer, Dr. Nilson said that he was motivated by the conviction that after ten years on the job, it was time some other doctor took over.

* * *

Remodeling of the building which Dr. William R. Blomberg purchased in Princeton some months ago has been completed and Dr. Blomberg is now located in his new offices. The suite includes waiting room, business office, two examining rooms for adults, a children's examining room, an x-ray room, a physiotherapy room, a refraction room for eye examinations, a developing room and a laboratory. The lighting is fluorescent, the walls are sound-proof, and a large exhaust fan changes the air in the suite every two minutes.

* * *

Dr. Theodore Hansen, formerly of Omaha, Nebraska, has entered practice at Alden, where he is associated with Drs. Donald Branham, Sidney Whitson and John P. Person. Dr. Hansen was recently discharged from the armed forces after three years in service. A captain in the Army Medical Corps, he was assigned to the South Pacific Theatre for twenty-two months. He is a graduate of the University of Nebraska School of Medicine.

* * *

The Van Meter Prizes, given by the American Association for the Study of Goiter for the best essay on original work in problems related to the thyroid gland, has been awarded to Dr. Brown M. Dobyns, M.D., M.S. in Surgery, assistant to the surgical staff, Division of Surgery, Mayo Clinic. The paper submitted by Dr. Dobyns was part of his thesis on studies of exophthalmus produced by thyrotropic hormone.

Dr. Dobyns read his essay at the meeting of the Association held in Chicago in June.

* * *

Dr. James R. Eckman, Mayo Clinic, has been presented with the Army Commendation Ribbon. The accompanying citation, signed by Major General N. T. Kirk, the Surgeon General, reads in part: "Your service with the Medical Department has been exceptional when compared with others of the same grade of position, and I wish to commend you for your outstanding contribution as Assistant to the Director of the Medical Intelligence Division, Preventive Medicine Service, Office of the Surgeon General.

* * *

Dr. Gerald H. Teasley, a fellow in urology at the Mayo Foundation, has been awarded the Legion of Merit "for outstanding service . . . characterized by proficiency surpassing that which might be reasonably expected of an officer in his position." Dr. Teasley, who was formerly director of the Military Personnel Division, Office of the Army Surgeon General, Washington, D. C., established the classification system which was followed in the distribution of officers. When released from service, Dr. Teasley was a lieutenant colonel.

* * *

The possible advantages attainable from a well-organized health department were discussed by Dr. Robert N. Barr, of the State Health Department, Saint Paul, at a meeting open to the general public held at the Senior High School in Winona. Various ways of establishing a central health department which would direct the activities of all organizations directly concerned with the health of the community were explained by Dr. Barr, who is pubic health consultant of local health units in the Middle West.

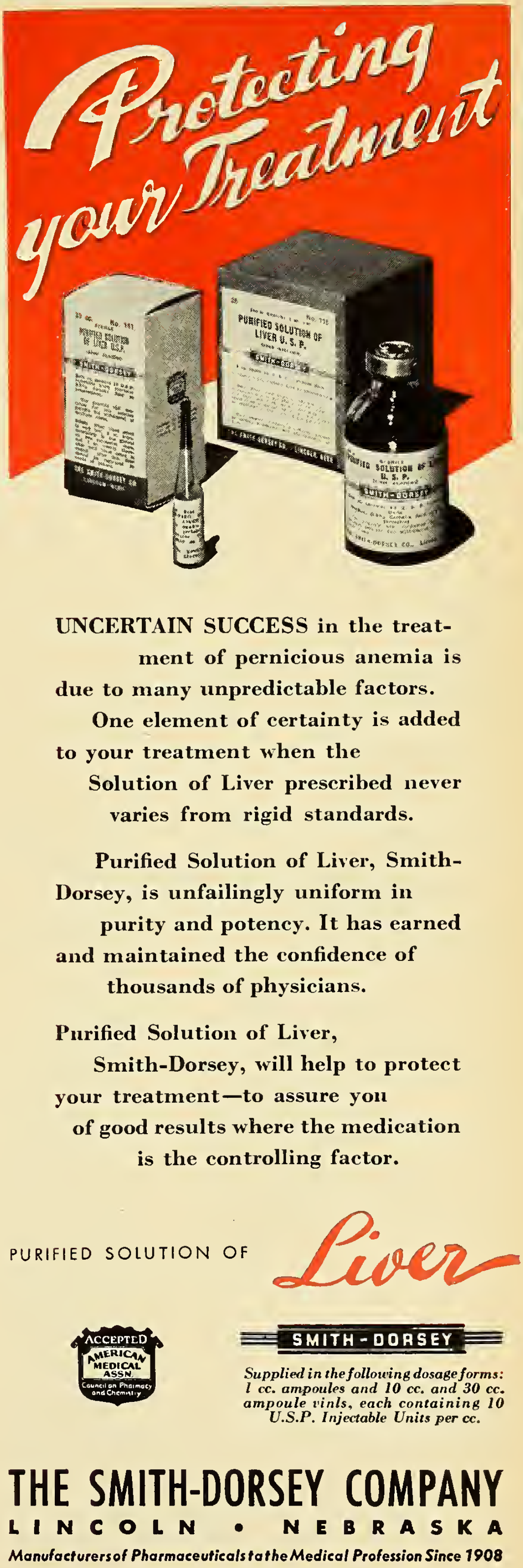
* * *

Dr. Jacob S. Blumenthal, Columbia Heights physician and surgeon, who has been located at 40th and Central Avenues for the past twenty years, has moved to 40th and Washington Avenues, where he has air-conditioned offices which include consultation room, examining rooms, x-ray rooms and developing room.

A fellow in the American College of Physicians, Dr. Blumenthal is a clinical professor of medicine at the University of Minnesota where he teaches internal medicine.

* * *

Since returning from twenty-five months of overseas duty in the Army Medical Corps, Dr. Solomon E. Horwitz, 902 Medical Arts Building, Minneapolis, has changed his surname to Howard. While in military service Dr. Howard's assignments included Consultant in Syphilis at the 23rd General Hospital (Buffalo University Unit) in Naples; Chief of Section of Dermatology and Allergy at the 3rd General Hospital (Mount Sinai New York Unit) in North Africa, and lecturer on skin and allergy diseases to medical officers in France prior to their redeployment to the Pacific Theatre.



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The Legion of Merit has been presented to Dr. Thomas B. Magath, of the Mayo Clinic, "for exceptionally meritorious conduct . . . as investigator for and advisor to the Surgeon General of the Navy on matters of sanitation and tropical medicine; as Navy representative on the Interdepartmental Quarantine Commission, and as Navy Quarantine Officer . . . he visited many of the principal cities of the world . . . helping to lay a foundation for future quarantine practices with special reference to air traffic." Dr. Magath was a captain in the Navy when he performed the services for which the decoration was awarded, but he was later promoted to the rank of commodore.

* * *

The Hennepin County Medical Society has announced the return from military service of the following members:

Dr. Clyde Cabot has resumed his practice in his offices in the Medical Arts Building. A member of the Army Medical Corps, Dr. Cabot served at Tripler General Hospital, Oahu, Hawaii.

Dr. Edward Colp has reopened his offices at 3805 Broadway, Robbinsdale. Dr. Colp served at naval air stations in the South Pacific.

Dr. Frank Smisek, whose offices are at 1501 Washington Avenue South, Minneapolis, was on duty in the South Pacific Theatre for fifteen months.

* * *

Dr. Gordon Anderson, physician and surgeon, who has been head of a clinic at Great Falls and Deer Lodge,

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$15,000.00 accidental death *$75.00 weekly indemnity, accident and sickness*	**$24.00** *Quarterly*
$20,000.00 accidental death *$100.00 weekly indemnity, accident and sickness*	**$32.00** *Quarterly*

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Montana, has entered private practice in Hibbing, where he was born and grew up. Dr. Anderson graduated from the University of Minnesota Medical School in 1934 and took pastgraduate work in New York City. His offices which consist of reception room, nurses room, x-ray room, laboratory and private offices, are located at 1920 Fourth Avenue East.

While practicing in Montana, Dr. Anderson was chief surgeon for the Montana State Prison at Deer Lodge and for the Milwaukee and Northern Pacific railroads.

* * *

Dr. Paul P. Pierce, who was resident physician at the Children's Memorial Hospital in Chicago when he entered military service three and a half years ago, has been appointed assistant director of the Rochester Child Health Project and consultant in the Pediatrics Section of the Mayo Clinic.

A native of Columbia, Missouri, Dr. Pierce received his B.A. from the University of Missouri and his medical degree from Harvard in 1939. He served his internship at the Kansas City General Hospital. While in the Army Dr. Pierce was stationed at the Lawson General Hospital in Atlanta, Georgia, for two years, and afterward at the 181st General Hospital in India for eighteen months.

* * *

Dr. Albert D. Mattson, who has been engaged in graduate study at the University of Minnesota Medical School since his discharge from military service last September, is now associated with the Madison Clinic in Madison. Dr. Mattson, a graduate from Central High School and Macalester College, Saint Paul, took his medical degree at the University of Minnesota in 1939. Following the completion of his internship at St. Mary's Hospital in Duluth, he was in general practice at Milaca for a year. From there he went to Atwater and five months later was inducted into the Army, where, with the rank of captain, he was attached to the Air Force and served in China for twenty-six months.

* * *

Dr. Russell H. Frost, formerly a member of the Saint Paul Clinic, has been made director of tuberculosis treatment at all Veterans Administration Hospitals in VA Branch 8. The area includes Minnesota, the Dakotas, Iowa and Nebraska.

Dr. Frost, a native of Willmar, graduated from the University of Minnesota Medical School in 1925. At the time of his entry into military service in 1942 he was medical director and superintendent of the Buena Vista Sanatorium at Wabasha. A commander in the Navy Medical Corps, his assignments included Chief of Medicine at the Marine Barracks, New River, N. C., the Navy Medical Center at Bethesda, Maryland, and later Pearl Harbor and Majuro Atoll in the Marshall Islands, where he was transfusion consultant.

* * *

Dr. O. L. Norman Nelson has been discharged from the Navy and is now associated with Dr. A. C. Kerkhof in the practice of internal medicine with offices at 601 Medical Arts Building, Minneapolis. Dr. Nelson was

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first assigned to the U. S. Naval Hospital, Seattle, Washington, October 19, 1942. Subsequently he was associated with the Naval Air Stations at Seattle and Whidbey Island, Washington. In October 1943 he was assigned to the Medical Field Service School at Camp Elliott, San Diego, and then to the Marine Corps Base. In March 1944 he went overseas with the Marine Aviation Units of the Fleet Marine Forces, spending most of his time on Bougainville, Esperitu Santo and Peleliu. In June 1945 he returned from overseas and was stationed at the U. S. Naval Hospital, Medford, Oregon. He was separated from the service January 4, 1946, with the rank of Lieutenant Commander.

* * *

A special meeting in honor of members returned from military service was held by the Southwestern Minnesota Medical Association at the Lutheran Church in Slayton on May 13. According to the report of the secretary, Dr. Bryon O. Mork, Jr., only eight of the thirteen members who were inducted into the armed forces have returned to their former practices; the other five are believed to have located elsewhere. The guests of honor were Drs. Albert I. Balmer and Stanley Chunn, Pipestone; Dr. Victor Doman, Lakefield; Dr. Walter Bret Wells, Jackson; Dr. Ludolf J. Hoyer, Windom; Dr. Peter J. Pancratz, Mountain Lake; Dr. Gerrit Beckering, Edgerton; and Dr. Walter B. Schmidt, Worthington.

The members who have not returned to their former locations are Dr. Graham G. Smith, Fulda; Drs. Stuart Taylor and Ira B. Wilson, Worthington; Dr. Robert Hebbell, Windom, and Dr. Lawrence E. Sjostrem, Storden.

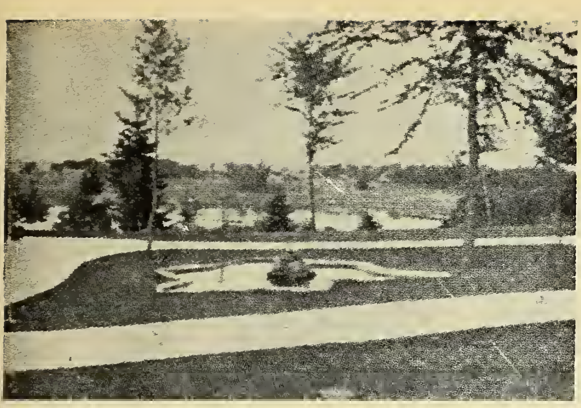
* * *

Dr. John S. Burleigh, Rancho Santa Fe, California, has been admitted to practice in Minnesota by the State Board of Medical Examiners and has opened offices in Luverne. Although born in Luverne in 1913, Dr. Burleigh has lived in California since he was twelve years old, when his mother moved there following the death of his father, a Luverne banker. He took both his B.A. and medical degrees at the University of Southern California and served his internship at the Presbyterian Hospital in Los Angeles. He entered the Navy in 1941 and served aboard the aircraft carrier, USS *San Jacinto* in the campaigns of Iwo Jima, Okinawa, the Philippine Sea, the China Sea, and others in that area. He returned to this country just prior to the end of the war and at the time of his discharge was a full commander.

In returning to Minnesota, Dr. Burleigh is fulfilling a long-cherished desire, and he says that now that he is back he likes it better than he thought he would. He is married and has three sons—Michael, aged two, and Philip and Christopher, twins, a year old.

* * *

The Seelert Orthopedic Appliance Company of Minneapolis celebrated its silver jubilee this month by moving into new and larger modern quarters at 18 North Eighth Street. New office hours have also been announced, the hours being from 8 a.m. to 5 p.m. week days, except Saturdays, when the hours are from 8 a.m. to 1 p.m. The company will continue to manufacture artificial limbs and orthopedic appliances as in the past.



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Hospital News

St. Luke's Hospital at Fergus Falls has announced the appointment of Sylvester H. Braaten as business manager. Mr. Braaten recently returned to Fergus Falls after four years in military service. He was overseas for eighteen months and as a master sergeant was in charge of the supplies and equipment for a 1,785-bed hospital.

* * *

The community of Jackson is raising funds by public solicitation for the purchase of the hospital operated there by Dr. Walter H. Halloran, who desires to dispose of it. The price asked for the hospital, equipment and the Halloran home is $80,000, and $50,000 must be raised in order to finance the project. While any contribution is welcomed, a donation of $25 makes the donor a stockholder in the hospital and carries one vote. No stockholder will be entitled to more than four votes in order to avoid the possibility of any one individual or faction monopolizing control of the hospital. This does not mean, however, contributions are not to be as large as means and liberality dictate. The hospital is to function as a non-profit organization and will qualify for approval by the Blue Cross.

* * *

In tuberculosis the first and greatest need is education; education of the people and through them education of the state.—Edward Livingston Trudeau.

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REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR JULY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

July		
4— 1:15	WCCO	Safe Vacation
6—11:30—	KUOM-KROC KFAM	Medicine in the News
11— 1:15	WCCO	Care of Skin in Summer
13—11:30—	KUOM-KROC KFAM	Medicine in the News
18— 1:15—	WCCO	Hot Weather Health Hints
20—11:30	KUOM-KROC KFAM	Medicine in the News
23— 1:15	WCCO	Your Community Hospital
25— 1:15	WCCO	Getting Children Ready for School
27—11:30	KUOM-KROC KFAM	Medicine in the News

CIVIL SERVICE MEDICAL OFFICER TO BE APPOINTED SOON

Appointment will be made soon of a Regional Medical Officer in the Eighth Regional Office of the U. S. Civil Service Commission, Saint Paul. The salary is $7,102.20 per annum. Duties require a medical training. Detailed information as to duties and forms to be filled out and filed before July 24, 1946, may be obtained from the Eighth U. S. Civil Service Regional Office, Post Office and Customs Building, Saint Paul 1, Minnesota.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The eleventh annual meeting of the Mississippi Valley Medical Society will be held at the Hotel Jefferson, St. Louis, Missouri, September 25-26-27, 1946.

More than thirty clinical teachers from the leading medical schools will conduct this postgraduate assembly whose entire program is planned to appeal to general practitioners. There will be more than sixty technical and scientific exhibits, noon-day round table luncheons, and a banquet, preceded by a social hour. Dr. Arthur H. Compton, Nobel Prize Laureate and Chancellor of Washington University, will be the principal banquet speaker, together with the presidents of the Illinois, Iowa and Missouri State Medical Societies.

(Continued on Page 733)

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GYNECOLOGY—Two-week Intensive Course, starting October 21. One-week Personal Course in Vaginal Approach to Pelvic Surgery, starting September 16.

OBSTETRICS—Two-week Intensive Course, starting October 7.

MEDICINE—Two-week Intensive Course, starting September 23.

ELECTROCARDIOGRAPHY AND HEART DISEASE—Two-week Intensive Course, starting August 5.

GASTROSCOPY AND GASTROENTEROLOGY—Two-week Personal Course, starting October 7.

DERMATOLOGY AND SYPHILOLOGY—Two-week Course, starting September 23.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THROUGH THE STRATOSPHERE. The Human Factor in Aviation. Maxine Davis. 253 pages. Price, $2.75, cloth. New York: The Macmillan Co., 1946.

DISEASES OF THE RETINA. Herman Elwyn, M.D. Senior Assistant Surgeon, New York Eye and Ear Infirmary. 593 pages. Illus. Price, $10.00, cloth. Philadelphia: The Blakiston Co., 1946.

DIABETES. Henry J. John, M.A., M.D., F.A.C.P. Lt. Col., MC, Cleveland, Ohio. 300 pages Illus. Price, $3.25, cloth. St. Louis: C. V. Mosby Co., 1946.

HUMAN EMBRYOLOGY. Bradley M. Patten, Ph.D. Professor of Anatomy in the University of Michigan Medical School. 776 pages. Illus. Price, $7.00, cloth. Philadelphia: The Blakiston Co., 1946.

CORKY, THE KILLER. A Story of Syphilis. Harry A. Wilmer, M.D. 67 pages. Illus. Price, $1.00. New York: American Social Hygiene Assn., 1945.

The invasion of the human body by the spirochetes which cause syphilis is tersely reported in the vocabulary of modern warfare by Dr. Harry A. Wilmer, M.D. and Ph.D. in Pathology from the University of Minnesota, who graphically illustrates this invasion by "Corky, the Spirochete," as he did in his previous account of tuberculosis entitled, "Huber, the Tuber."

The author's imaginative talent has the endorsement of several outstanding figures in Medicine including Kendall Emerson, J. E. Moore, Paul A. O'Leary, and Thomas Parran. The American Social Hygiene Association is the publisher, and the dedication is to Dr. Richard E. Scammon, Professor at the University of Minnesota School of Medicine.

This readable account of the attack of syphilis upon the human body is recommended both to lay readers and, because of its scientific accuracy, to medical students and physicians.

M. J. O. GULLINGSRUD, M.D.

RENAL DISEASE. E. T. Bell, M.D., Professor of Pathology, University of Minnesota. With 115 illustrations and four color plates. Price $7.50. Philadelphia: Lea and Febiger, 1946.

This is the best book on renal diseases written to date. This volume should have a wide reception not only because Dr. Bell is a recognized authority on diseases of the kidney, but also because he is regarded by his students as an outstanding teacher at the University of Minnesota Medical School. Students of Dr. Bell remember him for his lectures and his pathological conferences Tuesday noon where the clinical and pathologic features of cases are discussed and correlated. Most clinicians are a little subdued in the presence of a pathologist, but any clinician knows he has to very sure of his ground in discussing a clinical matter with Dr. Bell. His knowl-

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edge of clinical medicine as well as pathology is astounding, as this book testifies.

The chapter on the histology of the kidney is excellent, and it should be noted that most of the fundamental studies concerning the structure of the glomerulus originated in Dr. Bell's department. The review of the normal and pathologic physiology of the kidney is concise and comprehensive. It is in the discussion of glomerulonephritis and the hypertensive kidney that the author is at his best. The chapters on lipoid nephrosis and the eclamptic kidney should be singled out for their excellence. Mention is made of the kidney in crush syndrome, hepato-renal syndrome, burns, et cetera.

The illustrations are clear and the photomicrographs are technically superior. A workable bibliography is appended. This book is recommended without reservation to anyone who wishes to have the most up-to-date knowledge of kidney disease.

THE MARIHUANA PROBLEM IN THE CITY OF NEW YORK, Sociological, Medical, Psychological and Pharmacological Studies. By the Mayor's Committee on Marihuana. Lancaster, Pa.: The Jaques Cattell Press, 1946.

In 1939 Mayor LaGuardia, upon the recommendation of the New York Academy of Medicine, appointed a committee whose findings and conclusions are collected in this extensive and thorough study of the marihuana problem. The traffic in and smoking of the drug, which created the interest in the study at the outset, seemed less a problem in New York City, indeed confined mostly to the region of Harlem, than in New Orleans and other southern cities.

The psychological studies relating to drug effects indicate that popular understanding is in error, that is, the drug is of little value to musicians, and as a causative factor in crime marihuana is perhaps overrated. The report of the pharmacological aspects is exhaustive and adds and collects many new concepts in the literature pertaining to active principles, the chemistry, and the specific effects of marihuana and its derivatives.

This volume is recommended to educators, public safety officials and sociologists, as well as to members of the medical profession.

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Reports and Announcements

MISSISSIPPI VALLEY MEDICAL SOCIETY

(Continued from Page 731)

All ethical physicians are cordially invited to attend. A detailed program may be obtained from the Secretary, Harold Swanberg, M.D., 209-224 W.C.U. Bldg., Quincy, Illinois.

WASHINGTON COUNTY MEDICAL SOCIETY

The Washington County Medical Society met May 14 in regular monthly session. There was no scientific program as the action on "A and B" Plans had been postponed till this time for further study and consideration. Dr. Wade R. Humphrey, a member of the Committee on Organization for Prepaid Medical Service, in the meantime, volunteered to obtain all available information on the subject. This he did and explained at length.

After due consideration and according to the By-Laws, the following Amendment was unanimously adopted: Be it enacted that "a fifty per cent (50) attendance by members at our regular meetings is necessary to maintain membership by members practicing in Washington County."

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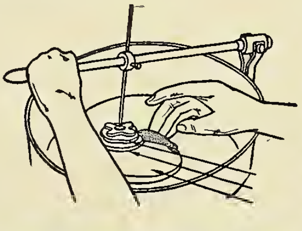

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 **August, 1946** **No. 8**

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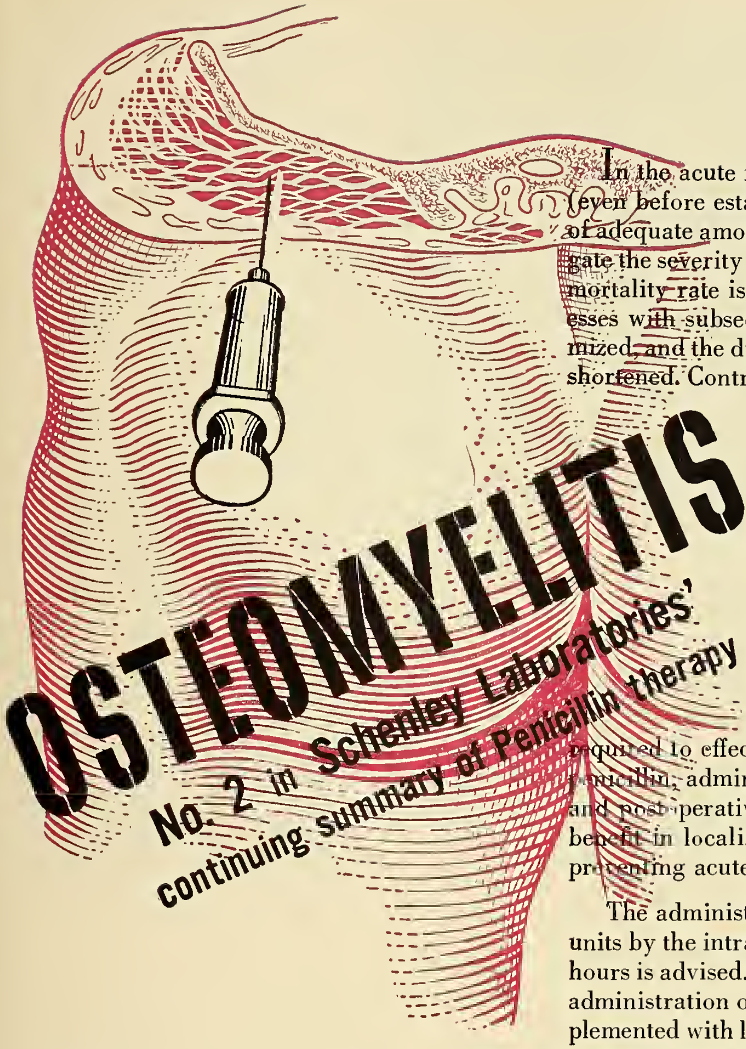

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KEEFER, C. S. *Penicillin—Its Present Status in the Treatment of Infections: The Nathan Hatfield Lecture XXIX, Am. J. Med. Sc. 210:147 (Aug.) 1945.*

ALTEMEIER, W. A.: *Treatment of Acute Hematogenous Osteomyelitis with Penicillin, Ohio State M. J. 42:489 (May) 1946.*

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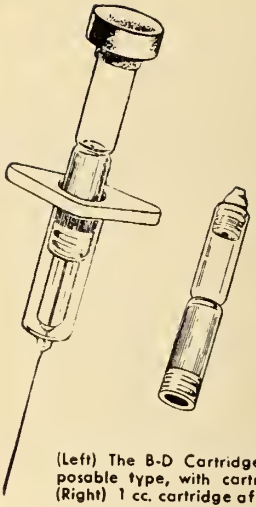

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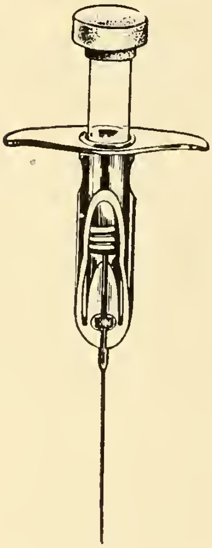

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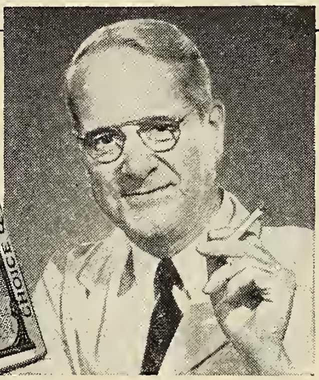

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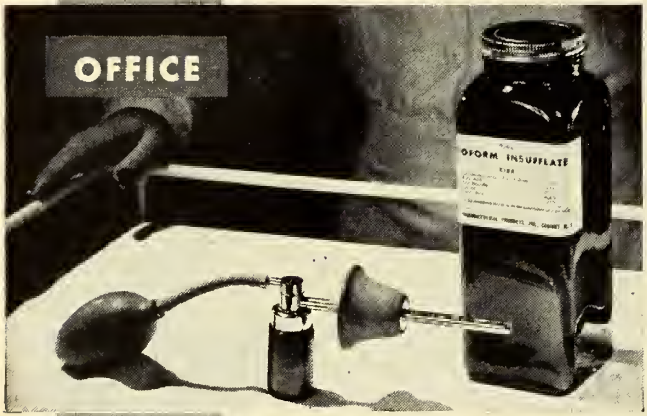

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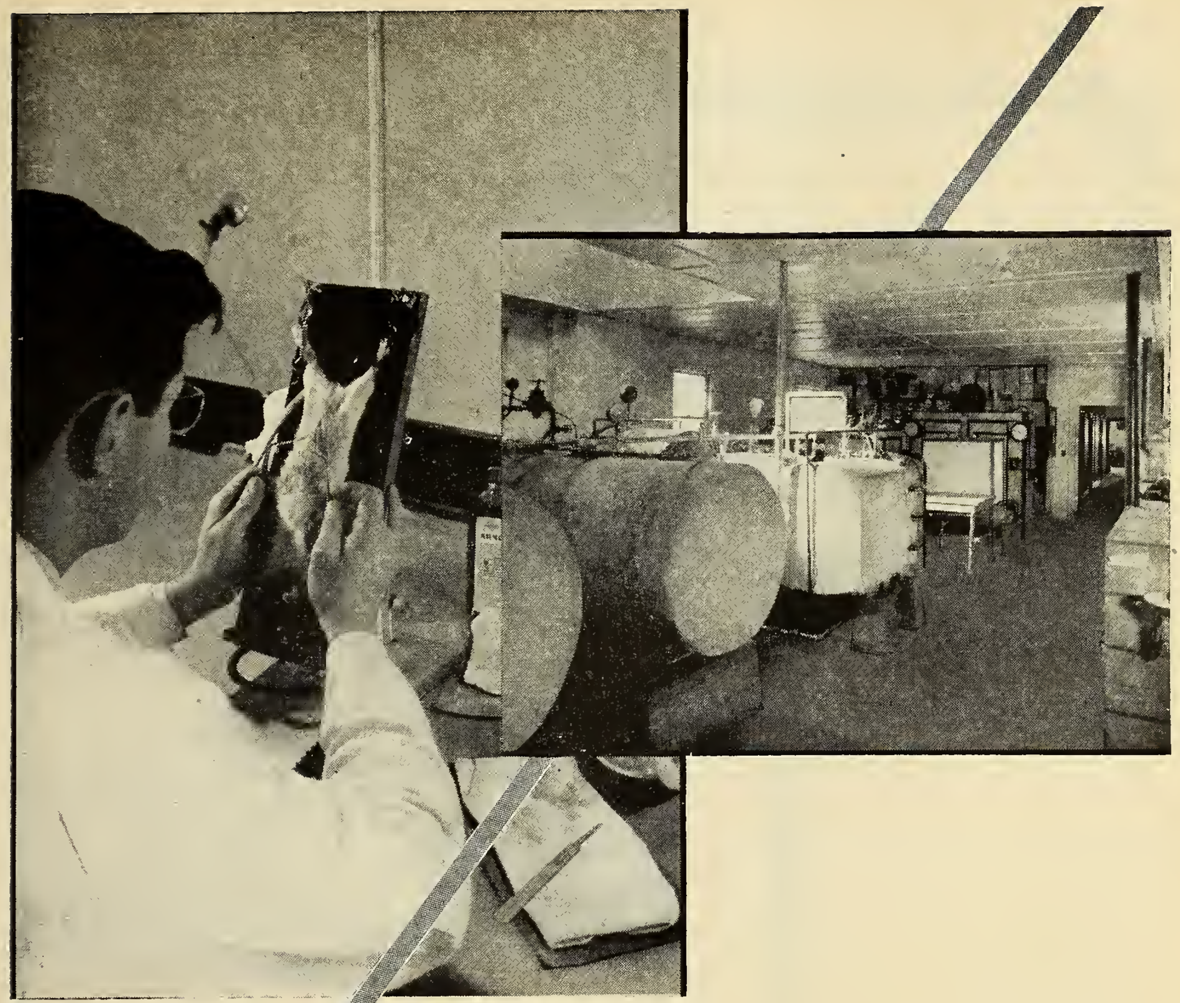

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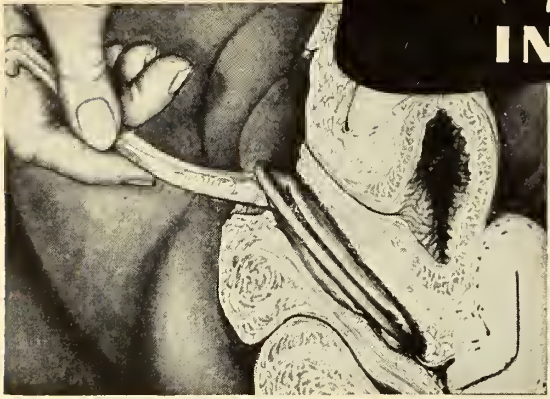
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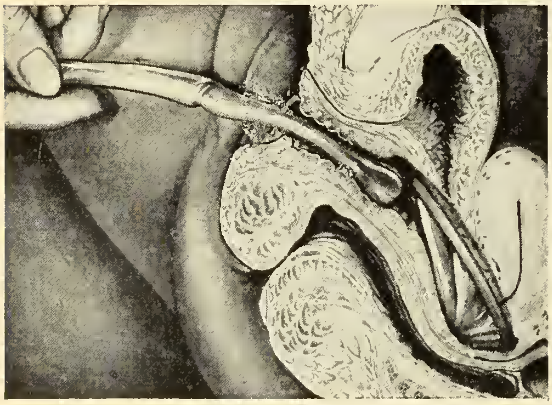

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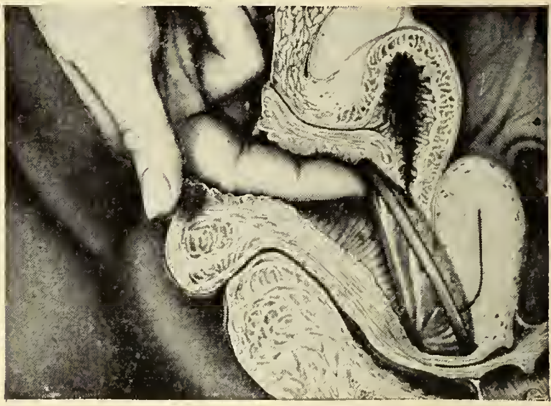

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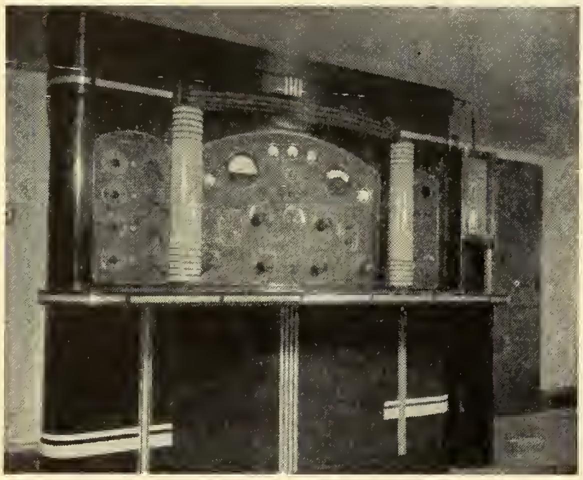

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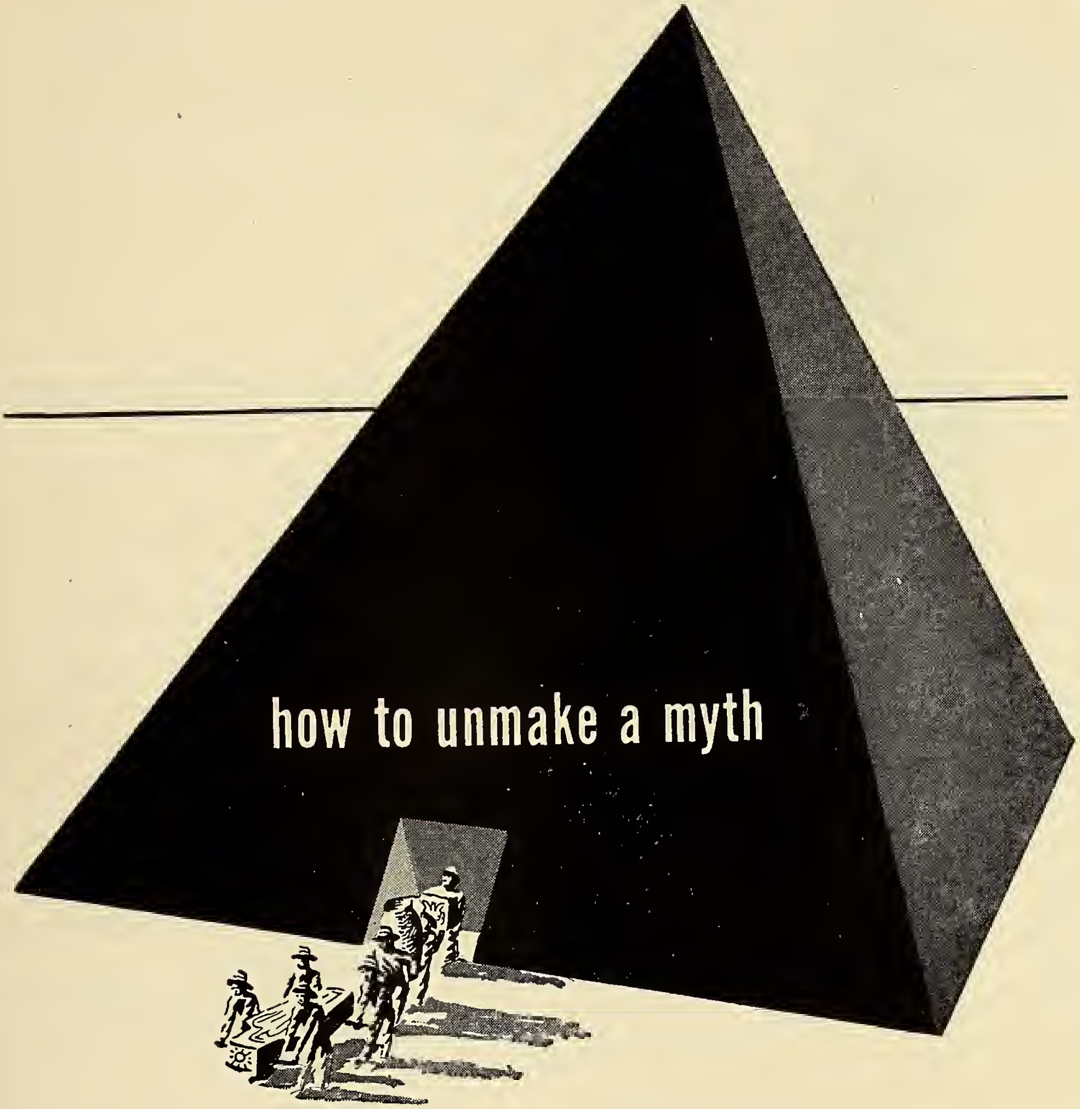
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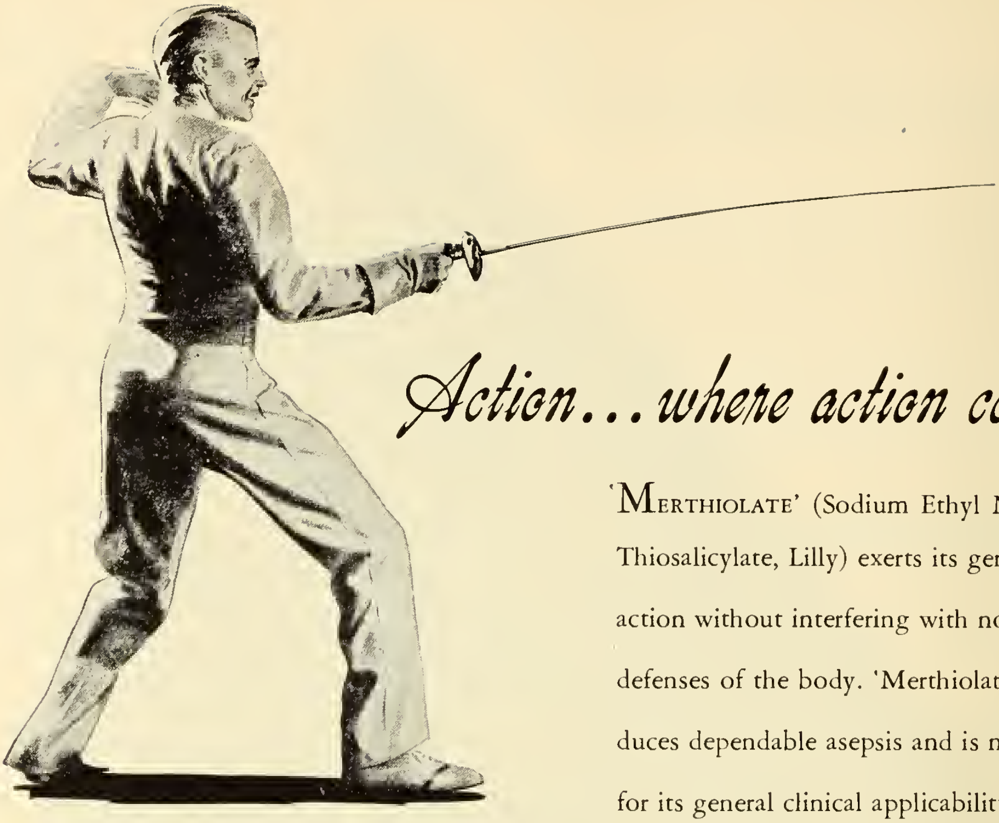

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POLIOMYELITIS

A Review of Its Epidemiology with Especial Consideration of the Autarceological Concept of Immunity

ALEX G. BERGER, M.D.
Minneapolis, Minnesota

FEW diseases can boast of as much interest as has been centered, of late, on poliomyelitis. Few diseases have been discussed, written about and investigated as much as this disease. Yet every now and then one sees the statement that, in the past two decades, very little new epidemiological understanding has really been acquired. It is, therefore, fitting to occasionally review this disease and evaluate representative portions of the vast epidemiological data that have been presented in recent years. It is hoped that in this manner one may get some idea of the progress, if any, that has been made towards the attainment of a clearer and more complete understanding of this infection.

Poliomyelitis is not a new disease. Evidence of its effects are believed traceable as far back as 1600 B.C.[41] Yet the first clear description of the disease seems to have originated with Underwood in 1799. More complete descriptions were furnished by Heine in 1840 and Medin in 1875. In 1905, first mention of its apparent communicability was made by Wickman. It was not, however, until 1909, when Landsteiner and Popper demonstrated the possibility of reproducing the disease in monkeys[47], that scientific corroboration of the various epidemiological considerations could be attempted.

A mass of experimental data has since been produced. Much of this is controversial and confusing. A clearer picture can be obtained only by a careful evaluation of the various concepts suggested. A brief consideration of each factor involved in the communication of this disease is therefore presented.

Etiological Agent

Briefly, it can be stated that most investigators are pretty well agreed that poliomyelitis is caused by a filterable virus. Rosenow, however, is of the opinion that the etiologic agent is a pleomorphic streptococcus. He points out that streptococci are not infrequently isolated from the cord and spinal fluid of poliomyelitis cases. The general opinion, nevertheless, is that such streptococci are unrelated to the disease and hence without etiological significance.[47]

Much time has been given to the study of the virus, yet much more work needs to be done. Our ideas on immunity in poliomyelitis, as well as any attempts to trace the transmission and effects of this organism are greatly dependent on our ability to isolate the specific strain of virus causing the particular outbreak of the disease. The confusion and controversial opinions as to whether immune bodies are produced during a poliomyelitis infection may well be due to lack of specificity in the strain of virus used. Though various strains have been isolated, several investigators feel that many more strains exist in nature, many of which may appear simultaneously in the same outbreak. Aycock has recently pointed out that discrepant neutralization tests in poliomyelitis seem to be due to the use of

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Dr. Berger is Director of the Acute Communicable Disease Division, Department of Public Health, Minneapolis, Minnesota.

heterologous strains of virus; and when under controlled conditions a single strain can be isolated in a localized outbreak, all the convalescent cases reveal both the presence of immune bodies and immunity to that particular strain.[9]

Reservoir

Even before experimental evidence could be obtained, it had been assumed that the human animal was the only reservoir of poliomyelitis infection. Today, even after much investigation, the human being is still the only known reservoir. The possibility of other reservoirs, such as rodents or birds, must however be considered. Thus Jungeblut reported the recovery of poliomyelitis virus from a mouse found dead in a home where there had just been a fatal case of poliomyelitis[15]; also, in nine out of 100 samples of normal human sera examined, neutralization of Theilers virus of mouse encephalomyelitis has been obtained.[36] Birds have been found to play a part in equine encephalomyelitis "which is another summer viral disease of the central nervous system"[42] and therefore, must be considered a possible source of poliomyelitis.

The human reservoir consists of both frank and abortive cases, convalescent carriers, and normal carriers. Virus has been isolated from the nasal washings and intestinal discharges of both cases and healthy contacts. Such findings can well indicate the wide distribution of virus throughout the general population.[28]

Escape of the Virus

Escape or liberation of the virus from the human body seems to be accomplished in two ways; i.e., from the nasopharynx and the intestine. Virus has been found in nasal washings and on various sections of the oropharynx, especially in tonsillar and peritonsillar areas.[20] Still larger amounts of virus have been recovered from the feces of both case and carrier and has persisted in such excretions, occasionally for months.[29] Since the virus has rarely been isolated from human blood or lymph, the possibility of its escape from such media via a sucking insect is not considered likely at this time.[47]

Modes of Transmission

No definite agreement has, as yet, been arrived at regarding the method of transmission of poliomyelitis. Both the direct and indirect methods have its proponents. The recovery of poliomyelitis virus from intestinal discharges, from water, and sewage,[33] and its ability to survive the effect of chlorine in a concentration of 0.5 parts per million for one and a half hours,[27] are facts both interesting and worthy of contemplation. Such facts make it seem quite feasible for water to be a factor in poliomyelitis transmission. Still, as Maxcy points out, the epidemiology of poliomyelitis does not seem to correspond with the characteristics of a water-borne infection. In water transmission, you tend to have an explosive outbreak of infection, affecting, more or less simultaneously, a large number of people. These individuals are scattered rather than grouped together and have only the one connecting link; i.e., a common water supply which is subject to human pollution. Poliomyelitis, however, characteristically has a slow radial and progressive spread from an initial focus and "moves, in rural areas, at a constant speed from place to place regardless of the character of the local water supplies. There is not a single instance, so far, of an explosive outbreak of this disease which was due to a simultaneous exposure of a group of people to a common source of water."[31]

The possibility of other vectors of the virus beside water must be considered. Aycock has reported an epidemic of poliomyelitis occurring in Broadstairs, England, where the infected cases were all traceable to one milk dealer, with the milk coming from one particular farm.[2] The role of flies and other insects as factors in the mechanical transmission of the virus may assume increasing importance. In a detailed study of an outbreak of poliomyelitis in Mississippi, Lumsden, who is skeptical of the importance of personal contact as a major factor, emphasizes the possible role that the presence of rats, birds, domestic fowl, cows, flies, mosquitoes, fleas, or other insects might play in poliomyelitis transmission.[30] Detection of poliomyelitis virus in flies at various times tends to bolster such a point of view.[43] On the other hand, attempts by Toomey and others to recover poliomyelitis virus from fruit, well water, spinal cords of paralyzed chickens and the stools of sick dogs, found in vicinities where human poliomyelitis had occurred, were unsuccessful.[40]

The role of direct contact in poliomyelitis transmission still seems to be the major factor, according to many investigators. The presence of the virus, not only in clinical cases but also in subclinical cases and even in contacts with no apparent symptoms (healthy carriers), makes possible frequent and unknown contacts with the virus.[29,44] "It is only by conceiving of the mild and unrecognized cases of poliomyelitis that their means of communicability can be visualized, for study of the actual paralytic cases only, seems to show no relation to each other."[28]

Various detailed studies of poliomyelitis outbreaks tend to justify the above impression. Thus a study made of a severe epidemic in Walker County, Alabama, indicated that the transmission of the disease could be established as at least 80 per cent patient to patient contact.[12] Another similar detailed study made by Fishbein and Casey in Chicago confirmed the importance of contact in the transmission of the disease and emphasized the possibilities of overlooking mild cases unless an intensive neighborhood study is made.[12] In this connection, moreover, the experience of Perkins in southern Minnesota reveals how easy it is for patients and parents to either forget or to minimize the importance of their contacts with mild undiagnosed illnesses.[34] Exhaustive and painstaking questioning is necessary if one is to uncover the possible subclinical contacts made by a clinical case of poliomyelitis.

Portal of Entry

Although the virus of poliomyelitis is definitely neurotropic and apparently gets to the central nervous system by travelling along nerve tracts, no agreement has been reached as to how the virus reaches these nerve tracts nor what nerves are usually affected. Corresponding to the methods of escape of the virus, the two main concepts as to portal of entry concern the nasopharynx and the intestinal tract.

Toomey seems to be the chief exponent of the gastro-intestinal portal of entry.[38] He believes that the virus travels best along non-medullated or gray nerve fibers and since the nerve fibers ending in and near the intestinal mucosa are grey, a pathway for the virus to the central nervous system is provided. Toomey has been able to produce poliomyelitis in the monkey by placing virus in its intestine and clamping off that segment for several hours. However, in the unclamped intestine, the virus was swept through so rapidly that infection did not occur. It would seem, therefore, that conditions promoting the stagnation of intestinal contents, either physiological or anatomical in nature, would favor the penetration of the virus through the intestinal wall and into the sympathetic nerve fibers. Under ordinary conditions, however, the intestinal route of infection would seem to be less likely.

Most of the workers in this field favor the nasopharynx as the portal of entry. Experimental evidence, however, does not uniformly support this concept. Sabin has found characteristic pathological changes to be present in the olfactory bulbs of experimental poliomyelitis but could not confirm such findings in his examination of ten fatal human cases.[35] Chemical blockage of the olfactory nerve endings in the nose of a monkey seems to protect it from experimental infection. Similar results with human beings, however, have thus far, not been attained.[47] It is, therefore, felt that reactions in human beings may not be comparable in every respect to those experimentally attained in monkeys. Nevertheless, as Brodie and others have emphasized, because the virus has been isolated from the mucosa and nasopharyngeal washings of both case and carrier and because the epidemiology of the disease resembles in many respects a droplet infection, it is felt that the most likely portal of entry of the poliomyelitis virus is the nasopharynx.[10]

Susceptibility

Probably the outstanding and most interesting feature in the epidemiology of poliomyelitis is its apparent selective occurrence both as to season and individuals affected. Epidemics seem to routinely occur in summer and early fall and clinical cases occur in only a comparatively few of the individuals living in the region affected. Though it has long been noted that the disease may vary considerably in its severity and that a large percentage of those affected never develop paralysis, the full range of the variability in reaction to the poliomyelitis virus is just beginning to be fully appreciated. For not only can the virus be found in definite clinical cases but it has also been isolated from individuals who have experienced either very mild symptoms or none at all. Such findings help us to appreciate the vast extent of poliomyelitis infection and lead us to ask—what then are the factors that determine just what will happen when the virus contacts its human host? What determines whether such a contact may bring on the much dreaded paralysis or may merely occasion symptoms no worse than a mild respiratory infection? Various answers have been suggested. They can be only briefly considered and evaluated in this review.

It is well to remember that every infection represents an interaction between parasite and host and that the resultant effect is dependent not only on the virulence and number of the invading organisms but also on the powers of resistance of the host. It is quite possible that the specific strain, involved in an outbreak of poliomyelitis may be a major determinant of the severity of that epidemic. Yet many a student of this problem feels that it is more a difference in those exposed rather than a difference in virus or exposure that determines whether or not paralysis occurs.[6] Consideration of the various factors that may affect the resistance of the host is therefore indicated.

Resistance or immunity of a host may be of a specific or non-specific nature. A specific immunity towards a disease is immunity attained by antibody formation and represents the defensive reaction of the body to the presence of the antigen; i.e., the parasite. Antibodies found in any individual could therefore indicate that, at one time or another, he has been invaded by the corresponding parasitic antigen. Resistance to infection, if dependent on antibody formation, would therefore be found more often in adults than in children and would be higher in urban than in rural areas. For the greater the chance of contacting the causative organism, the greater the possibility of responding with antibody formation. Actually this seems to be true in poliomyelitis. The disease is primarily one affecting children. Rural areas exhibit a comparatively higher incidence of infection among adults than do urban areas and correspondingly a greater percentage of its inhabitants come down with the disease when the poliomyelitis virus happens to strike. Moreover, when we consider that the virus has been isolated from individuals who have experienced only mild constitutional symptoms or none at all and that neutralizing antibodies have been found in the blood of a large percentage of people all over the world,[4] it becomes easy to appreciate the feeling that poliomyelitis infection may be as widespread as that of measles and that most individuals have attained some immunity to the virus through subclinical infection.

It must be recognized, however, that this concept of latent immunization through subclinical infection is not without its discrepancies or contradictions. Thus Burnet and Jackson found that on comparison of the sera of poliomyelitis patients taken at the acute stage with sera obtained from the same patient two or three months later, no evidence of any significant change in antibody titre could be observed in fourteen cases. They also found that children in the early stages of acute paralytic poliomyelitis may possess relatively large amounts of circulating antibodies or they may have none whatever. The children who had none did not develop any within two to three months after illness. Further, they claimed, none of the family contacts who had no antibodies at the time of contact developed it within a similar period. They, therefore, concluded that "poliomyelitis antibody is not a result of exposure to or infection by the virus of epidemic poliomyelitis."[11]

Jungeblut, in an attempt to evaluate immunity production in the monkey, reports the following observations: (1) "Occurrence of virucidal antibodies in the serum of monkeys convalescing from a paralytic attack of poliomyelitis is very irregular with respect to its formation, speed of development, and maintenance over long periods of time; (2) Monkeys convalescing from a paralytic attack are uniformly insusceptible to intracerebral reinoculation with the same strain of poliomyelitis virus, irrespective of the presence or absence of the virucidal titre at the time of reinoculation; (3) Reintroduction of virus into the central nervous system of monkeys convalescing from a paralytic attack of poliomyelitis fails to produce an increase in serological titre of virucidal substances;" and (4) A modified form of the virus which produced only fever in the monkey did not seem to protect it from a later more potent dose.[25] He therefore feels that immunity and antibody formation are not necessarily attained through virus contact. He suggests that the increase in immunity developing as one grows older may be primarily due to factors inherent in maturity and not due to exposure. He also points out that antibodies found in poliomyelitis cases or contacts are not necessarily similar immunologically to other specific antibodies as found in anti-bacterial and other antiviral serums, for they are not specifically absorbable and do not give such immune reactions as alexin fixation and precipitation or flocculation.[22] This fact alongside the inconsistencies in antibody formation as determined by experimentation would seem to favor this non-specific maturation theory as the more rational concept for the explanation of immunity in poliomyelitis.

However, the maturation theory would not explain why adults in urban areas seem to have nore immunity to the virus than do similar aged adults in rural areas. It is also quite possible that nany of the inconsistencies noted in respect to the finding or lack of finding of antibodies following poliomyelitis infection may be due to immunity tests with strains of virus not identical with those responsible for the cases being tested. For more recent studies have shown that there are many more strains than previously suspected and that several strains of virus may be involved in the same epidemic. Thus Aycock has shown that immunity tests performed on a group of patients recovered from poliomyelitis, when tested against an old laboratory strain, gave a positive neutralization in only three out of 10 tests. But when tests were made against a local strain recovered from one of the fatal cases, the virus was neutralized in all ten tests.[9]

Though subclinical infections might explain the increase in immunity acquired as one gets older, it still does not tell us why under similar conditions of exposure, children of similar age react so differently on contact with the virus. Such differences in reaction seem rather to be due to differences in the make-up of the individual, i.e., the non-specific factors of resistance.

The "Poliomyelitis" Type

"Even in the earliest writings about poliomyelitis, there is found the suggestion that the paralytic disease exhibits a tendency to selective occurrence in certain types of individuals."[8] Descriptions of the disease by Underwood, Heine, and later by Wickman, all draw attention to the fact that poliomyelitis seems to occur most often in the child who appears exceptionally robust and in perfect health. These observers and others who followed them merely noted this fact but did not appreciate the possibility that it might be a fundamental epidemiological feature of the disease. It was Draper who first made a detailed study of such morphologic characteristics and gave impetus to the idea that there may be a definite "poliomyelitis" type.

Thus in his study of the epidemic of infantile paralysis in 1916, Draper makes the following observations:[13] "The patients displayed certain definite morphologic characteristics which appeared with insistent regularity. The type of child which seems most susceptible to the disease is the large, well grown, plump individual who has certain definite characteristics of face and jaws; is broad browed and broad and round of face. The teeth are particularly interesting. It was noted that in 50 or 60 per cent of all the cases in the hospital at Locust Valley, the central incisor teeth of the upper jaw were separated by a cleft of varying width." "Among the adolescents and young adults who acquired poliomyelitis and in whom the disease seemed always to be most severe and indeed, usually fatal, the type differed from that just described." Here there appeared a more delicately made type. "Of the six or eight fatal cases in young adults, seen by the writer, the similarity of appearance of the individuals was so striking that all might have been of one family. All were brunettes, with very delicate dark skins and high coloring of cheeks and lips." "In this connection, also, it is interesting to note that a surprising number of the fathers of children ill with poliomyelitis presented striking anthropologic markings. Thus one was a definite acromegalic, while two others were clearly Froehlich types, dark haired, fat faces and bodies, narrow shoulders, broad hips and knock-knees. It is interesting too, to record the numerous instances of two, three, four and five cases in families with such parental types, suggesting, possibly, a true family susceptibility."[13]

In a later paper, Draper goes on to say, "Some of the morphologic characters of this group of people which differ from the general population can be demonstrated by anthropometry and expressed in numerical values, other features cannot be subjected to mensuration. But observational and descriptive methods suffice to display the striking qualities." Thus unusually wide interpupillary spaces and wide facial diameters give these children their broad, wide-eyed expression. They also "tend to gain weight and are often definitely pudgy, fat types. The hand index (breadth-length ratio) shows a short broad form. This is ordinarily correlated with acromegaloid trends in the facial structure. The pelvis of these individuals is definitely wide as compared with the shoulders. This character is generally accepted as a definite mark of the neuter or feministic type. In both sexes, it marks that deficient gonad activity which results in retarded development and checks metamorphasis toward the finished form of the mature individual of either sex. The large bodies and small gonads seem characteristic of these individuals and represent a tendency to overgrowth and retarded development. In non-susceptibles, however, growth and development proceed more in step with each other and with age."[14]

Draper suggests that the variations in the degree of the morphological differences extend from barely imperceptible ones to those of highly statistical significance and that this scale may parallel the severity of the individual illness. He also emphasizes the relation of age to maturing achievement. The ages before and after puberty, he says are critical ones in the process of development of the individual. The controls pass through these years with little change in their rates of growth while the poliomyelitis tends to grow faster during the years before and after puberty. Such constitutional characteristics, he concludes, point toward deficiencies of the pituitary, gonads, adrenal cortex and possibly the thyroid glands and may be due to adverse genetic or intra-uterine forces.[14]

"Dissenting views of Draper's thesis have been taken by Levine, Neal and Park, and also by Thelander and Pryn."[9] Their findings tended to show no demonstrable differences in anatomical characteristics between controls and poliomyelitis patients. Aycock, however, supports Draper's work and expresses doubt as to whether the dissenting experiments were quite comparable in every respect to that of Draper's. He, in turn, goes one step further in his elaboration of the "poliomyelitis type" and in so doing introduces a new term, namely, autarcesis.

Autarceologic Susceptibility

By autarcesis, Aycock refers to those properties of resistance in the host which cannot be explained by the specific immunity due to formation of antibodies. He attempts to define and elaborate his theory of autarceological susceptibility by approaching the problem along three individual yet interrelated methods of consideration; i.e., (1) the epidemiologic and genetic considerations, (2) anthropometric studies of individuals attacked and (3) experimental attempts to influence the susceptibility of monkeys.[3]

Aycock first draws attention to the observation that though the virus appears to be widespread—resulting in cases throughout the world, only a small percentage of the population exposed to the virus actually develop paralytic poliomyelitis. Furthermore, "the paralytic disease is less prevalent in warmer latitudes and yet it uniformly reaches its highest incidence in the warmer months of the year."[5] Such selectivities in occurrence suggest to him that autarceological susceptibility is "associated with the failure on the part of a certain percentage of people to make adequate physiologic adjustments to varying climate and season."[3]

That this susceptibility to poliomyelitis infection is hereditary is suggested by various studies, all of which emphasize the fact that the clinical disease "runs" in certain families. In a survey of the incidence of poliomyelitis in families, Aycock pointed out that 51 per cent of the cases gave a history of the disease among relatives, while only 5 per cent of normal individuals gave a similar history.[5] Again, in another survey, Swartout and Frank point out that of 721 patients admitted to the Los Angeles County Hospital, 9.29 per cent or sixty-seven came from families with multiple cases. These investigators suggest that better diagnosing of cases might reveal an even higher percentage of familial occurrences.[37]

Further investigation by Addair and Snyder[1] tends to confirm the familial aspect of poliomyelitis. In their study, they present evidence for the existence of an autosomal recessive gene for susceptibility to paralytic poliomyelitis. Their survey covered twenty-nine individuals suffering from poliomyelitis residing in a portion of McDowell County, West Virginia. Genetic relationships were traced among all twenty-nine affected individuals. In fourteen of the cases, paralytic poliomyelitis could be traced both in the fathers and in the mothers pedigree, while in the remaining fifteen cases, affected individuals are demonstrated in the pedigree of only one parent. They point out that in families affected, one out of 5.5 individuals came down with paralytic poliomyelitis. This ratio is slightly smaller than expected with a recessive gene (one out of four usually affected) and therefore the gene appears to have a reduced penetrance. Such familial incidence is further emphasized by the following description of the area affected. "This region is made up of mountains and valleys and so the families are more separated geographically than would be the case in flat country. The community as a whole was not highly inbred and the families affected lived in many different valleys and were often completely out of touch with one another. On the other hand, there were hundreds of families living among those affected in which no trace of paralytic poliomyelitis had occurred. It would seem therefore, that the familial aspect of poliomyelitis is pretty much of a surety.

Aycock concurs with Draper's doctrine that poliomyelitis tends to occur in individuals of a certain constitutional type. In a series of anthropometric studies on 109 poliomyelitis patients, in which he measured their span (arm length), their leg length and their body length, he found that they showed increased span, increased lower measurement and decreased body length as compared to normal.[3] Such measurements, he believes, are indicative of endocrine differences and are suggestive of either relative hyperpituitarism or hypergonadism. It is interesting to note that these experimental studies tend to agree only partially with Draper's observations. Most of Draper's children were of the Froehlich type, i.e., hypopituitary cases. Draper's adults, however, revealed more of the acromegalic, i.e., hyperpituitary features. Both of these studies, however, indicate the presence of an endocrine imbalance in the "poliomyelitis type."

Autarceological susceptibility, says Aycock, does not lie only in a fixed anatomical characteristic but is more of a physiological irregularity and is evidenced by the inability of the poliomyelitis type to adapt himself to climatic and seasonal variations. He suggests that this "susceptibility may reside in an endocrine difference, more largely subclinical, but expressing itself as a frank endocrinopathy in a portion of the individuals affected and more particularly at certain periods of growth and development, irrespective of the age of the poliomyelitis attack, which is more directly a function of exposure to the virus."[5]

Aycock's third method of attack on the problem of autarceological susceptibility is through experiments with monkeys. In this manner, he attempts to discover not only the exact nature of this endocrine imbalance but also its method of operation. Thus after administration of estrin to a group of twelve castrated immature female monkeys, he found that it enabled seven of these monkeys to survive the intranasal instillation of virus. The remaining five of the treated monkeys, though ultimately succumbing to the effects of the virus, seemed to display a longer incubation period than usual. On the other hand, ten other similar monkeys who did not receive estrin died rapidly from the effects of the virus. Furthermore, he notes, "It has been shown that castration of immature female monkeys (Macacus rhesus) results in thinning of the genital mucosa. The giving of estrogens to such animals effects a recornification of the genital mucosa and the nasal mucosa participates in these experimental changes."[5] He therefore feels that changes in the nasal mucous membranes by alterations in the hormone secretion may well be the basis of increased susceptibility to the infection.

This concept, however, is also beset by apparent discrepancies. Thus Aycock found that pregnancy seems to be associated with poliomyelitis about four times as frequent as would normally be expected in non-pregnant individuals. Furthermore, a closer examination of this relationship reveals that it is only in the second and third trimester of pregnancy that an increased susceptibility occurs. The first trimester seems to display just the opposite effect for it appears to confer an increased immunity upon the host.[46] Aycock admits that the apparent increase of susceptibility in the later periods of pregnancy seems to be contradictory to his other experimental observations, for in pregnancy the estrogenic contents appear to be elevated. However, he draws attention to the fact that in pregnancy we have not one but several hormones, all of which may interact and produce a condition that is actually different than an increase in estrogen alone.[7]

Weaver likewise attempts to explain the apparent decrease in susceptibility during the first trimester and notes that "in pregnancy we have not only an elevation of estrogen and progesterone (which are present in normal individuals) but also an addition of a new substance called gonadotropin (anterior pituitary-like hormone).[46] On the other hand, Jungeblut has found poliocidal substances in the serum of pregnant mares and states that this property is not present in all pregnant mares but varies irrespective of the gonadotropic hormone titer of the serum.[23]

It would seem, therefore, that many possibilties exist in pregnancy both as to combinations of different hormones and changes in the proportions of each hormone. More complete knowledge of their relationship is necessary before the variable effect of pregnancy on the susceptibility to poliomyelitis can be clearly understood.

In another experiment, Aycock was able to compare the amount of estrogenic substance excreted by chronic poliomyelitis patients with that excreted by normal individuals. He found a higher average excretion of estrogenic substance in the group of poliomyelitis patients. Such findings, he concludes, indicate that "autarceological susceptibility does not lie in a simple deficiency in the elaboration of estrogenic substance, but rather in some discrepancy in its economy."[5]

Fraser, in his review of poliomyelitis[16], criticizes Aycock's attempts to draw conclusions from the latter experiment for, he says, "estrogen excretion during the disease tells us nothing certain about the endocrine state before the disease which is the time when susceptibility exists if ever." Fraser forgets, however, that the acute phase of the disease was past. Most of these patients had come down with the disease as long as twelve months previously and were being treated only for the chronic residual effects of poliomyelitis. Thus unless the disease occasions a permanent effect on the endocrines, the state of their hormone relationships after an attack should be similar to that before the attack and the experiment could therefore be of significance. The occasional occurrence of second attacks of poliomyelitis seems to partially substantiate the latter point of view.[32]

Studies made by various other investigators seem to further emphasize the role of the endocrines in autarceological susceptibility. Thus Jungeblut et al have observed that adrenal tissue hormones can cause the neutralization of the virus of poliomyelitis. They believe the virucidal factor here may be identical with the gonad stimulating hormone and may act by an "oxidative or hydrolytic destruction of virus, such as may occur with ferment-like metabolic substances."[26]

Since adrenal hormones have been found to inactivate the toxin of diphtheria as well as the virus of poliomyelitis, it is well to comment, at this time, on the relationship that seems to exist between the two diseases. Thus Heaslip suggested the possibility of a relationship in susceptibility to both diphtheria and poliomyelitis after noting that in a group of children of ages six to 12, 70.6 per cent of those affected with poliomyelitis were Schick positive while only 40.2 per cent of the controls showed a positive reaction.[17] Further observations which suggest some common relationship between the two diseases are as follows: (1) placental extracts have been found to contain neutralizing principles against both poliomyelitis virus and diphtheria toxin; (2) immunization of monkeys with diphtheria toxoid or TAT mixture increased the resistance of nearly one-half of the animals in various degrees to subsequent poliomyelitis infection; and (3) studies by Perkins et al showed seasonal fluctuations of normal diphtheria antitoxin in adolescents. "This curve foreshadows, with fair precision, the rise and fall of poliomyelitis epidemics."[21]

Jungeblut suggests that the basis of this relationship may well be the common protective action furnished by the adrenal and pituitary hormones. For he notes that diphtheria toxin exerts an inflammatory effect on the adrenals and lesions in the anterior pituitary gland have been reported following diphtheria intoxication. Therefore, he asserts, it is conceivable that "such substances as diphtheria toxin, when introduced in small doses parenterally, initiate a characteristic stimulation of the endocrine system, which releases certain principles into the circulation and tissues." Thus, it seems, protection against one disease whether inborn or artificially acquired may be associated with some resistance against the other.[21]

Vitamins

Experiments have shown that certain of the vitamins are closely related to some of the endocrines and therefore may share in their protective action. Thus vitamin C has been found in large quantities in the adrenals and nerve tissue and like the adrenal hormone, it has been found able to inactivate both diphtheria toxin and poliomyelitis virus. Experimental work with monkeys seems to confirm the apparent protective action of vitamin C. Jungeblut observed that six times as many animals escaped paralysis following the administration of natural vitamin C as did the corresponding controls. In this respect, he emphasizes that natural vitamin C was about three times as effective as the synthetic vitamin. It would seem therefore that there is greater need for the utilization of vitamin C during the height of a poliomyelitis infection and unless vitamin C is supplied in large quantities, the nerve tissue becomes more susceptible to the effects of the virus.[24] Heaslip tends to concur with Jungeblut's observations. He likewise points out that since there usually is a decreased excretion of vitamin C. following infection, "it is probable that a low level of vitamin C nutrition predisposes to infection and severity of attack."[18]

Vitamin B deficiency has also been proposed as a major factor responsible for increased susceptibility to the effect of the virus. Helms, who is one of the more recent sponsors of this theory, reasons thus:[19] (1) "Authorities consider the virus of poliomyelitis almost exclusively neurotropic and therefore the physiology of the nerve cell may determine its resistance to the virus; (2) Vitamin B is believed to be directly concerned in the physiology of the nervous system more than any other vitamin." Therefore, its deficiency would have a direct bearing on the patient's susceptibility to the paralytic effects of the virus. Helms goes on to compare beriberi, caused by vitamin B deficiency, with poliomyelitis and says they resemble each other in time of occurrence, male predominance and predisposition by muscular exercise. He points out that poliomyelitis is inclined to occur with greater frequency when the demands for vitamin B are great, as in childhood, pregnancy and after excessive muscular exercise. He concludes with the suggestion that "paralytic poliomyelitis occurs only when the bio-chemical state of the central nervous system is such as to favor the propagation of the virus and that hypovitaminosis B may be one cause of such a bio-chemical state."[19]

Weaver, however, in experimentation with cotton rats, was not able to confirm that increased intake of vitamin B complex had either a prophylactic or therapeutic effect in poliomyelitis.[45]

Toomey, on the other hand, seems to feel that vitamin D deficiency is the prime factor promoting the occurrence of paralysis in poliomyelitis. He states that experimentally the virus does not ordinarily spread along well-myelinated nerves of healthy Macaca Mulatta monkeys but that the virus will spread along nerves of vitamin D deficient monkeys if the virus is simply placed in contact with post ganglionic fibers. He presumes, therefore, that "in the latter animals, the preganglionic medullated nerve fibers to the adrenal gland are made deficient and hence are more susceptible."[39]

We find, therefore, that there are many factors that can possibly affect the susceptibility of an individual and thus predispose him towards a paralytic conclusion if, perchance, he contacts the virus of poliomyelitis. All have some experimental confirmation and yet no one factor seems able to uniformly account for all the findings as they occur in human poliomyelitis. More probably, all have functions in the defensive mechanism of the body; functions operating not separately or individually but rather as interrelated and interdependent, and working harmoniously, when in their proper relationship, towards the protection of the body from its many parasitic invaders.

Summary

A review of the epidemiology of poliomyelitis has been presented and evaluated. Many controversial facts and opinions have been noted. Though no one concept seems to be without its discrepancies and weaknesses, the writer feels, at this time, that the epidemiology of poliomyelitis is more satisfactorily explained by the following observations and suggestions:

1. The etiological agent of poliomyelitis is a filterable virus which consists of many different strains.
2. The virus of poliomyelitis is widespread throughout the world.
3. The virus seems to be spread primarily by droplet infection in a person to person contact but other vectors such as insects may aid in its mechanical transmission.
4. Most individuals respond to virus contact by experiencing a mild or subclinical infection and so build up their latent immunity to the disease.
5. Paralysis in poliomyelitis is the unusual complication and seems to occur only in a very small percentage of the population affected by the virus.
6. The factors determining the occurrence of paralysis seem to be primarily in the non-specific phase of host immunity. These factors seem to

be hereditary and include constitutional and physiological variations from the normal. Such variations may exist as only very slight and inapparent differences, but may also occur as marked and easily recognized deviations from normal.

7. The endocrines and vitamins seem to be intimately associated with the production of this physiological susceptibility to the effects of the virus. The manner of their operation is still not clearly understood.

8. Though considerable more work needs to be done on all phases of its epidemiology, the outlook for a more uniform and clear understanding of poliomyelitis in the near future seems promising.

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LEPROSY

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LEPROSY is a neoplastic disease caused by the Mycobacterium Leprae and is included in that group of diseases known as infective granulomas. According to the point of attack of the Mycobacterium Leprae (be it the skin or the nervous system), the disease assumes two clinical forms: (1) nodular leprosy, and (2) maculo-anesthetic leprosy. A mixed type also occurs.

Characteristics

The nodular type of leprosy is characterized by the formation of lumps or nodules in the skin about the face (Fig. 1). As this nodular infiltration progresses, the skin appears to thicken on the forehead, in the region of the eyebrows, on the lobes of the ears, and on the cheeks, nose, and lips producing the so-called "leonine" expression. Some of the nodules remain unaltered for long periods of time and may undergo spontaneous absorption. Other nodules may ulcerate and heal leaving depigmentated scars.

The maculo-anesthetic type of leprosy is characterized by flat patches or macular lesions of the skin beginning on the extensor surfaces of the extremities. The skin at first is hyperesthetic because of the infection of the superficial nerve trunks. The invasion of the nerve trunks not only results in the loss of sensibility to touch, heat, and cold, but also produces trophic changes in various groups of muscles. The ensuing contractures of tendons produce the "lepers claw." Facial muscles undergoing atrophy give the features a "masklike" appearance. This type of leprosy is the most insidious.

The mixed type of leprosy in the earlier stages has the characteristics of the nodular type but later assumes the symptoms and characteristics of the maculo-anesthetic type.

Occurrence

From the references made in the Old Testament, there is evidence that leprosy occurred as long as two thousand years before the Christian era. In parts of the Orient it probably has existed for thousands of years. However, historically, the leprosy of the Arabic peoples has been frequently confused with the elephantiasis of the Greeks. During the eleventh century a great epidemic began which swept through England and the continent. The Old English name given to the disease was "Myckle Ail" or "Great Disease." The segregation of the victims of the disease into leprosariums led to a wiping out of the scourge by the end of the sixteenth century. Though the disease is not as widespread as it was at one time it still occurs sporadically in all parts of the world. Leprosy is common in the southern Asiatic countries. It occurs frequently in the Mediterranean countries, Central America, and the Southwest Pacific Islands. Though it is now regarded as a tropical disease it has appeared in Norway, Iceland, Canada and the United States. In the United States foci exist in Minnesota, New York, South Carolina, Texas, California, and Louisiana. The United States Government main-

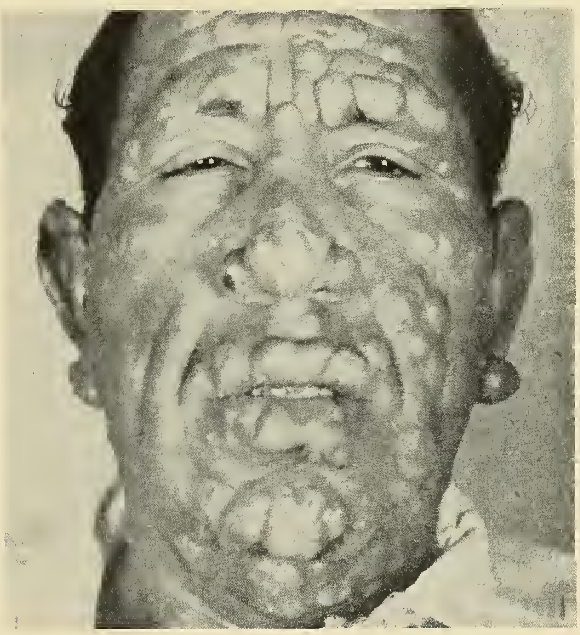

Fig. 1. The nodular type of leprosy is characterized by the formation of lumps or nodules in the skin about the face. (Courtesy of Colonel G. H. Faget, Medical Director and Medical Officer in Charge, U. S. Marine Hospital—National Leprosarium, Carville, Louisiana.)

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EDITOR'S NOTE: While the author was on active duty with the Army, he visited the Leprosarium located in the Assam Valley at Jorhat, India. This hospital, a Baptist mission, was under the supervision of Dr. C. V. Kirby.

tains leprosaria at Carville, Louisiana and on the island of Molokai in Hawaii. There can be no doubt that leprosy is contagious. However, it is not highly contagious, for only after long intimate contact can it be transmitted from one person to another. The susceptibility of exposed persons can be correlated with such predisposing factors as poor personal hygiene and unsanitary environment. Leprosy is found in all age groups but is more common in adults than in children. The incidence is about equal in the sexes during childhood. In adults the disease occurs more frequently in the male.

Diagnosis

The advanced case of leprosy cannot be mistaken for any other disease; however, the prodromal symptoms are those common to other infectious diseases and consist of pains in the muscles and joints, backache, headache, neuralgias, digestive disturbances, rhinitis, pruritus, and various disturbances of sensation. If the patient comes from a region where the disease is endemic, he should be examined in good light for any thickening of the skin or superficial nerve trunks and nasal lesions. The portal of entry of the organism, Mycobacterium Leprae, is not definitely known, although in many lepers the nasal septum seems to be the first site of attack. In fact, perforation of the nasal septum is not uncommon. While this observation implies transmission by inhalation the evidence is far from conclusive. In the advanced case of leprosy the actual diagnostic differentials are not difficult. Certain manifestations of syphilis, lupus vulgaris, mycosis fungoides, hemorrhagic sarcoma and of the comparatively rare annular syphilids may confuse the diagnosis. The scientific method of differentiation is the bacteriological diagnosis in the attempt to find the specific Mycobacterium Leprae in the scrapings of a discharging lesion or ulcer. In the advanced case the Mycobacterium Leprae may be found in all the viscera; however, one investigator found the organism in the blood of only nine out of twenty-eight lepers. Likewise the Wassermann test is frequently positive in nonsyphilic lepers affected with nodular leprosy. The Mycobacterium Leprae, discovered by Hansen in 1873, resembles that of tuberculosis in respect to its morphology and reactions to stains. The histopathologic section of leprous tissue resembles that of tuberculosis and syphilis but the instances in which these diseases might obtrude the clinical diagnostic manifestations of leprosy are more hypothetical than a reality.

Oral Manifestations

Vignes reports that leprous ulcers are found in the mouths of 41.33 per cent of the 372 patients in the National Leprosarium in Louisiana. This would indicate that oral manifestations are present in the well-advanced and recognized cases of leprosy which practically precludes the possibility of a dentist being called upon to make the original diagnosis of a new case even in an endemic area. In the chronic case of leprosy an oral examination will reveal the following conditions in whole or in part:

1. *Lips:* The nodular type of leprosy studding the lips is a painful lesion. Movement of the lips irritates the nodules which soon ulcerate. Severe ulcerations go on into necrosis. Ulcers which heal produce contractures and scars resulting in the so-called "buttonhole mouths." This may require surgical intervention in order to gain access into the mouth for dental restorations.

2. *Tongue:* The tongue may appear to be fully developed but, in instances, it may be tesselated like pavement blocks of different sizes with raised nodules set off by deep furrows. This is not particularly painful.

3. *Oropharynx.*—In the oropharynx, the uvula and the palatine pillars are the common site of the leprous nodular lesion. In the maculo-anesthetic type of leprosy of the pharynx, paralysis of the soft palate and the muscles of mastication restrains speaking and swallowing not unlike a diphtheritic paralysis. Perforation of the soft palate occurs in some cases.

4. *Buccal Parieties.*—The nodular type of leprosy rarely occurs on the buccal parietes; however, in the maculo-anesthetic type any portion of the buccal parieties may be involved anesthetically either unilaterally or bilaterally and indicates affection of either the trigeminal or facial nerves or both. Lesions of the buccal parieties when appearing are frequently associated with leukoplakia.

5. *Gingiva.*—Gingivitis occurs in the nodular, maculo-anesthetic and mixed types of leprosy although it is the most common in the nodular

type. Nodules in the gingival tissue give the appearance of hypertrophic gingivitis. The gingival tissue lingual to upper anterior teeth is an area frequently involved.

6. *Alveolar Process.*—In the advanced case of the mixed type of leprosy, resorption of an alveolar process occurs primarily involving the premaxilla. This is observed radiographically and is also reported to occur beneath dentures.

7. *Teeth.*—The teeth are not affected, although they become loosened and the hypertrophic characteristics of the lesions give the teeth a buried appearance. Leprosy is not hereditary and an inherited predisposition to it has never been demonstrated.

Treatment

Leprous patients with excorations, ulcers and secreting wounds are very apt to contaminate immediate surroundings and hence should be strictly segregated. Many remedies have been attempted unsuccessfully; however, some patients improve after long continued ingestion of chaulmoogra oil. Some promising results have been obtained from the injection of the ethyl ester of the fatty acids of chaulmoogra oil over prolonged periods—two, three, or even five years—with intervening periods of rest. For the past five years interest has centered on the sulfones. Of these the most thoroughly investigated is Promin. Faget, et al., regard Promin as "the most encouraging experimental treatment ever undertaken at the National Leprosarium" (Fig. 2). While there is no direct evidence that Promin exerts a specific bacteriostatic or bactericidal action against Mycobacterium Leprae, it does appear capable of inhibiting the progress of leprosy in a considerable percentage of cases.

Conclusion

As long as the state of Minnesota is reportedly a foci for leprosy and now that men and women of the armed forces are returning from areas of endemic leprosy it may well become the opportunity of a dentist to recognize the prodromal syndrome of leprosy, for the period of incubation for leprosy is extremely variable. It may be several months or years. Wise reports that in one of his patients the period of incubation was estimated to be twenty-three years.

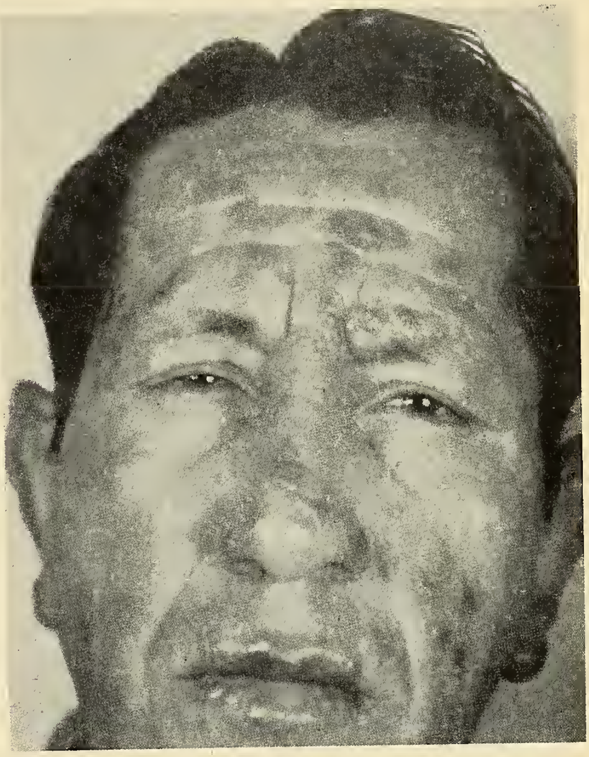

Fig. 2. This is the face of the leprous patient shown in Figure 1 after a period of approximately one year's therapy with Promin. Improvement is obvious but smears are still positive for Mycobacterium Leprae. (Courtesy of Colonel G. H. Faget, Medical Director and Medical Officer in Charge, U. S. Marine Hospital—National Leprosarium, Carville, Louisiana.)

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SURGICAL TREATMENT OF THROMBOPHLEBITIS

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THE last five years have seen a great increase in the interest of both surgeons and internists concerning the old problem of thrombophlebitis of the lower extremities and pulmonary emboli. It is now well known that these conditions are not confined to postoperative surgical patients but are seen equally as often in non-surgical patients.

Hunter, in 1945, in a carefully studied series of cases has found that approximately 50 per cent of all patients beyond middle age develop thrombi in the deep veins of their lower legs if they remain in bed for more than a few days. The incidence is much lower in younger patients but other predisposing factors are such that the possibility of intravenous clotting of blood can not safely be overlooked in any adult patient. Figures purporting to express the actual incidence of thrombophlebitis vary over a fairly wide range, but at least 1 to 2 per cent of all major operations are followed by the development of thrombosis in the convalescent period. Of those patients who develop a recognizable thrombophlebitis, 5 per cent will die of a pulmonary embolus if untreated. The importance of this condition for the surgeon is further emphasized by the fact that about 5 per cent of all deaths following operation are due to pulmonary emboli.

Homans, in 1934, was the first to distinguish between two distinct types of thrombi in the deep veins of the lower extremities. One type, which he called the "bland thrombus" is accompanied by few, if any, clinical signs or symptoms other than a slight rise in temperature and pulse. Such a thrombus is but loosely attached to the intima of the vein. The other type is that present in the classical milk leg in which thrombus formation is accompanied by a marked reaction in the wall of the vein which secures it and in most instances prevents the occurrence of embolism. The signs and symptoms of this type of thrombus are pain and swelling with pallor of the affected part accompanied by a moderate increase in the temperature and pulse rate. Homans recognized the greater potentiality of the bland thrombus as the source of pulmonary emboli and recommended that in such cases, the superficial femoral vein in the affected extremity might well be ligated.

Ochsner and DeBakey have further distinguished the bland thrombus from the thrombus associated with an inflammatory reaction. To the former they gave the name "phlebothrombosis" and for the latter retained the term "thrombophlebitis." Their studies have clearly shown that most of the signs and symptoms of thrombophlebitis are due to a reflex vasospasm of arterioles which can be relieved effectively by the injection of novocaine to block the lumbar sympathetic ganglia. This method of treatment was first used in Europe by Leriche and his colleagues but Ochsner and DeBakey have advocated and popularized its use in the United States.

The recent discovery of dicumarol and its adaptation for clinical use with or without heparim has given the clinician a new means of treating both phlebothrombosis and thrombophlebitis. This phase of the problem will be considered by Dr. Barker who is better qualified to discuss it than I am.

Following Homan's recommendation that the superficial femoral vein be ligated in certain cases of thrombosis of the deep veins of the lower extremities, several years passed before doctors in general recognized the value of this simple procedure. Even at the present time the ardent advocates of this procedure are for the most part in Boston.

In 1941, Sears of the Beth Israel Hospital in Boston reported ten cases in which the superficial femoral vein had been ligated. He recommended that the vein be opened before ligation and any unattached thrombus present at that level be removed with suction. If a thrombus adherent to the vein at that point was encountered it was to be divided with the vein.

The following year, Fine, of the same hospital went one step further and recommended that the common femoral vein be ligated in any case in which the signs and symptoms of a thrombus were obvious or if a filling defect in the veins could be demonstrated by a venogram in cases of

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doubt. The common femoral vein was preferred over the superficial femoral vein due to the occasional occurrence of a pulmonary embolus originating in the profunda femoris vein.

Allen, of the Massachusetts General Hospital, in 1943, reported 279 ligations of veins in 202 patients with 211 of these ligations being performed in 1942.

The early proponents of thrombectomy included Läwen, Kulenkampf and Lange in Europe and Ochsner in the United States. Lange advocated the suture of the vein wall, thus restoring its patency after removal of the thrombus, but the others have felt that the vein should be ligated, and this is now the accepted practice. The procedure of thrombectomy while open to such theoretical dangers as dislodgement of a portion of the thrombus due to manipulation would seem in practice to be relatively easy and safe, provided the patient is operated upon in a semi-reclining position so that the flow of blood in the proximal portion of the vein is in a retrograde direction. Unattached thrombi are easily removed by the suction tip or forceps. Attached clots are much less easily removed and probably much less effectively. As previously mentioned, these clots are much less likely to be the source of an embolus and for that reason the propriety of attempting their removal can well be questioned.

In 1945 Bancroft of New York reported twelve instances of thrombectomy from the iliac veins with the administration of anticoagulants after the operation. In the same year, Parsons of Vicksburg also recommended the combination of ligation plus dicumarol.

Veal and Hussey in 1945 reported on their experiences in ninety-eight vein ligations in eighty-four consecutive cases. In nine patients pulmonary embolism occurred after ligation but all of these patients had had emboli prior to their ligations. It was the authors' opinion that in eight of these nine patients, the post ligation emboli were due to inadequate surgical treatment.

In a recent editorial in the periodical, *Surgery, Gynecology and Obstetrics,* Allen of Boston has summarized the experience of the Massachusetts General Hospital in the surgical treatment of thrombophlebitis up to August 1, 1945. Eight hundred sixty-one patients have been treated by ligation. The vena cava was ligated in fourteen instances and only two of these patients have developed a chronic edema of the legs with ulceration of the lower legs. He recommends the ligation of the superficial femoral vein of both legs in the usual case inasmuch as only one instance of a fatal embolus from the profunda femoris vein was noted in the entire series. In Allen's opinion, 6 per cent of the patients having infarcts of the lung before ligation will have additional infarcts of the lung afterwards. One hundred elderly patients have been subjected to prophylactic bilateral ligation of the superficial femoral veins.

Such reports as I have mentioned may seem somewhat extreme to many of us and certainly give cause for pause and thought to those of us who are responsible for the practical management of large numbers of patients and the training of surgeons.

The clinician is faced with the situation in which he has three methods of treatment, each with its advocates. What we as doctors must do is to realize the shortcomings of each of these methods and if possible to come to some understanding of the indications for the use of each method or for the use of a combination of them. In this experimental or trial stage of the newer methods of treatment of thrombophlebitis and phlebothrombosis it will be best if we keep our minds open and realize that any conclusions reached must be more or less tentative for the present.

Each of these methods has its advantages and disadvantages, some theoretical perhaps, but others definitely practical. For instance, lumbar sympathetic block would seem to be most indicated in those instances of thrombophlebitis where the symptoms secondary to vasospasm are most marked and where the adherent nature of the thrombus minimizes if it does not nullify the danger of producing an embolus by increasing the blood flow. There is a variable but definite amount of discomfort to the patient incident to these injections, and the inconsistency in the results due to inaccurately placed injections definitely decreases the usefulness and efficiency of this method in the hands of the average doctor. On the other hand, it must be admitted that if performed properly no other means of treatment brings as quick and dramatic relief to the patient with a severe milk leg.

The advocates of the use of dicumarol claim that it is effective in both phlebothrombosis and thrombophlebitis. They claim it is safe if the dosage is carefully adjusted and if the prothrombin time is accurately and frequently checked against controls. Whether or not the laboratory facilities available to him are of sufficient excellence to warrant the use of dicumarol is a question which each practitioner must decide for himself. The speaker would guess that such a situation would be the exception rather than the rule for most of us. Furthermore, dicumarol does not entirely prevent pulmonary emboli and while it may prevent the further propagation of a thrombus during its administration, thrombi are prone to form in susceptible individuals when its administration is stopped. In addition, 5 to 10 per cent of patients receiving dicumarol in therapeutic dosage are subject to spontaneous hemorrhages.

The advocates of thrombectomy and ligation and division of the deep veins draining the lower extremities emphasize the fact that emboli originating distal to the point of ligation are absolutely prevented. Approximately 6 per cent of patients so treated, however, will have emboli after ligation if only one leg is operated upon and if they had emboli before ligation. The source of these emboli has been assumed in most cases to be from the opposite leg if only one vein was ligated. In some instances the source of further emboli may be from the internal iliac venous system or from the ligated vein proximal to the point of ligation. The inability of the operator to be sure that the ligated vein is the only source for an embolus has been the reason why bilateral ligation is now being more frequently performed. The operation of thrombectomy and ligation of the superficial femoral or common femoral vein with local novocaine anesthesia would seem to be a perfectly safe and technically easy operation. The same cannot be said of ligation of the iliac veins or of the vena cava, which require a general or spinal anesthesia with an abdominal incision and a fairly extensive retroperitoneal dissection. Such an operation cannot be advocated routinely for any group of sick patients without an evaluation of the risks present in each individual case.

Fear of disability from prolonged swelling following ligation of the superficial or common femoral vein is probably not well founded. All are agreed that no permanent swelling follows ligation of the superficial femoral vein. Swelling after the ligation of the common femoral vein is greater in degree and of more frequent occurrence. Fine believes that swelling developing after the ligation of a vein is largely proportional to the swelling present before the ligation. Dennis has reported one case in which swelling of catastrophic proportion requiring fasciotomy resulted after ligation of the common femoral vein.

The point of ligation will depend somewhat on the attitude we take toward thrombectomy. Certainly ligation should be performed proximal to the end of the thrombus if the thrombus cannot be removed or is not removed. In cases with unattached thrombi, that portion of it lying proximal to the point at which a vein is opened prior to ligation can be easily removed by forceps and suction with a minimum of danger. Adherent thrombi can be removed in this manner much less easily and probably much less effectively.

During the past thirty months at the University of Minnesota Hospitals, fifty-eight cases of thrombophlebitis or phlebothrombosis were diagnosed clinically. All three previously mentioned methods of treatment were employed either singly or in combination in treating these cases.

FIFTY-EIGHT CASES OF THROMBOPHLEBITIS AND PHLEBOTHROMBOSIS

November 1944 to May 1946
University of Minnesota Hospitals

Ligation	15	(7 of these were also treated with dicumarol)
Dicumarol	35	(7 of these were also treated by ligation)
Lumbar sympathetic ganglia block	20	(7 of these were also treated with dicumarol and 3 by ligation)
Expectant treatment	5	

Nine of these fifty-eight patients had a thrombophlebitis of the saphenous major vein or its tributaries. Ligation of the proximal end of the vein was carried out in each instance. In only six instances were deep veins of the lower extremity ligated. These were as follows:

Common femoral vein (on one side)	2 cases
Common femoral vein (on both sides)	1 case
Superficial femoral vein (on one side)	1 case
Superficial femoral vein (on both sides)	2 cases

Five patients in the total group of fifty-eight patients died. Two died from septicemia secondary to a septic thrombophlebitis. One died from rupture of an aneurysm and one as the result of cardiac decompensation following a pulmonary infarct and the administration of dicumarol. The fifth patient died following the drainage of a subphrenic abscess.

During the same period seven other patients died suddenly as the result of pulmonary emboli secondary to unrecognized thrombi.

Certain patients will be seen from time to time n which even the most careful observation and ssiduous treatment may prove insufficient to save he patient from disaster. For example:

A fifty-six year old man was admitted to the Minneapolis Veterans Hospital March 18, 1946. He gave a history of having struck his left shin on a bath tub March 6. Several days later he noted that his left calf seemed hot and sore. The following day he experienced a severe sudden pain in his left lower chest and began to cough. He did not consult a physician, however, and by March 13 felt better. On March 18 he again experienced a sudden severe pain in his chest, this time on the right side and raised bloody sputum. He consulted his local doctor who made a diagnosis of pneumonia and referred him to the hospital.

After examination at the hospital a diagnosis of thrombophlebitis of the left leg with multiple pulmonary emboli was made and on the evening of the day of admission, the left femoral vein was explored. An adherent thrombus was found extending beyond the inguinal ligament, so the iliac vein was exposed in the retroperitoneal space. The thrombus was found to extend up to the bifurcation of the common iliac vein. Here the external iliac vein was divided and ligated.

Heparin by intravenous injection was started immediately as well as dicumarol by mouth. The heparin was discontinued after forty-eight hours but the dicumarol was continued for four days more until a spontaneous hemorrhage in the right gluteal region caused it to be discontinued.

On April 3, 1946, a third pulmonary infarction occurred and although the right leg was free of symptoms and appeared normal, the right common femoral vein was explored. This vein contained no thrombus but was divided and ligated.

On the following day a fourth pulmonary embolus occurred which caused death in a few minutes. At postmortem examination the site of formation for at least the final embolus was found to have been the left internal iliac vein.

Summary

Two types of intravascular clotting are now recognized and three new methods of treating these conditions have been proposed. Homans was the first to appreciate the value of ligating thrombus containing veins of the lower extremities in the treatment of these conditions. Ochsner and DeBakey have popularized the treatment of thrombophlebitis of the lower extremities by novocaine block of the lumbar sympathetic ganglia. Dicumarol has recently been recommended for use in both phlebothrombosis and thrombophlebitis.

Each of these methods has its advantages and disadvantages. The present would seem to be a stage of experiment and trial for these newer methods of treatment. The experience of the University of Minnesota Hospitals during the past thirty months includes only fifteen patients treated by ligation.

On the basis of the writer's own limited experience, combined with that of others as reported in the literature, it is proposed tentatively to treat cases in the future as follows:

1. Thrombophlebitis of the deep veins of the lower extremities by repeated blocks of the lumbar sympathetic ganglia.
2. Phlebothrombosis of the deep veins of the lower extremities by ligation of the superficial femoral vein of the involved side with removal of all thrombus extending proximal from this point.
3. Thrombophlebitis or phlebothrombosis of the saphenous major vein or its tributaries by ligation of the terminal portion of the vein.
4. Thrombophlebitis or phlebothrombosis by ligation of the veins of both legs proximal to the level of any remaining thrombus and the administration of dicumarol.

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ANTICOAGULANT THERAPY IN POSTOPERATIVE THROMBOPHLEBITIS AND PULMONARY EMBOLISM

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THE purpose of anticoagulant therapy is to prevent intravascular thrombosis and thereby to prevent embolism. It would seem logical to assume that in order to prevent thrombosis under all conditions it would be necessary to render the blood totally incoagulable for prolonged periods but obviously this would involve considerable risk. Considerable clinical experience indicates that it is necessary only partially to interfere with the coagulating mechanism, as indicated by coagulation tests of the blood *in vitro,* in order to prevent postoperative venous thrombosis.

As far as is known, anticoagulant therapy has no effect on a thrombus which already exists in a vein. Therefore, it may be asked, what is the rationale for giving anticoagulant therapy to prevent embolism when the thrombus already exists? The answer is that there is considerable clinical and pathologic evidence to indicate that by the time clinical evidence of thrombosis in veins of the calf of the leg or in an iliofemoral vein is sufficient to permit the diagnosis to be made, the thrombus is adherent and will not become detached.[5] The danger of embolus in these cases lies in the fact that the patient has demonstrated a tendency to thrombosis and therefore is liable to extension of thrombosis in a proximal vein or to fresh thrombosis in some distant vein. These secondary thrombi may become detached and form emboli while they are still fresh and, theoretically at least, they can be prevented by anticoagulant therapy. Practically, if postoperative thrombophlebitis has developed, and if adequate anticoagulant therapy has been administered, pulmonary embolism does not develop; this is further evidence that only a fresh thrombus, which means one that is minutes, hours or, at the most, one or two days old, will become detached and cause embolism.

Postoperative pulmonary infarction, or nonfatal pulmonary embolism without clinical indication as to its source, occurs three-fourths as commonly as does postoperative thrombophlebitis,[4,5] and is three times as likely to be followed, at a later date, by fatal pulmonary embolism. In these cases it is obvious that the second embolism is caused by a new thrombus and, theoretically and actually, the second embolism could have been prevented if anticoagulant therapy had been started soon after the first embolus had occurred.

Patients who give histories of having had thrombophlebitis or pulmonary embolism under any circumstances, and at any time prior to a surgical operation, are known to constitute greatly increased risks from the standpoint of the likelihood of postoperative thrombophlebitis and pulmonary embolism. Anticoagulant therapy, as a prophylactic procedure, is rational and advisable in this group of cases.

If adequate anticoagulant therapy will prevent postoperative venous thrombosis, it would seem logical to give it always in the immediate postoperative period. At present this is impracticable and hardly justifiable. Venous thrombosis afflicts only about 1 per cent, and fatal embolus only about 0.2 per cent, of unselected patients who have been subjected to operation.[3] Special supervision and at least one daily blood test are necessary when anticoagulant therapy is being used and there is a small risk of bleeding even with the best therapeutic technic. However, some patients who never have had thrombosis can be considered to present increased risk of postoperative thrombophlebitis and pulmonary embolism. The presence of obesity, varicose veins, heart disease, anemia, infection or a malignant neoplasm indicates an increased risk of postoperative thrombosis and, for patients who have these conditions, prophylactic anticoagulant therapy may be justified.

The danger of bleeding during postoperative administration of anticoagulants, particularly dicumarol, has been overemphasized. This danger is minimal if the drugs are used carefully and with proper individualization of dosage in each case. It must be remembered that the purpose is to impair coagulability of the blood definitely but not to render the blood totally uncoagulable. At the Mayo Clinic, widespread ecchymoses or hem-

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Read at the meeting of the Minnesota State Medical Association, Saint Paul, May 21, 1946.

orrhages as the result of use of anticoagulants have not been encountered postoperatively. Minor bleeding, in the form of localized ecchymosis in the skin, transient epistaxis or microscopic hematuria has occurred rarely. Serious bleeding has been even more rare. If serious bleeding has occurred, almost always it has been from the operative site, around drainage tubes in operative wounds, around duodenal tubes or around indwelling catheters. As a rule it has been encountered only in a few of the cases wherein an excessive anticoagulation effect has been produced. Very rarely has it taken place when impairment of coagulation was adequate but not excessive. The actual incidence of postoperative bleeding among a large series of patients who have received dicumarol at the Mayo Clinic is given in Table I. It will be noted that the incidence of bleeding was definitely less among patients who had thrombosis or embolism at any time than among those who never had had thrombosis or embolism. Two patients who received dicumarol died of hemorrhage from the operative site. Neither of these ever had had thrombosis or embolism and in both cases there is some doubt that the prothrombin deficiency produced by dicumarol was a factor in the bleeding. In one case the bleeding occurred early after administration, and before much anticoagulant effect had developed and, in the other case it occurred late, when the anticoagulant effect had almost subsided. At the clinic, fatal bleeding has not developed in any case in which postoperative thrombosis or embolism has occurred and in which dicumarol has been administered.

TABLE I. INCIDENCE OF BLEEDING AMONG PATIENTS TREATED POSTOPERATIVELY WITH DICUMAROL

Reasons for giving Dicumarol	Total patients treated	Minor bleeding		Major bleeding	
		Number	Per cent	Number	Per cent
Postoperative pulmonary embolism	292	6	2.1	3	1.0
Postoperative thrombophlebitis	280	10	3.6	3	1.1
History of thrombosis or embolism at any time prior to immediate operation (prophylaxis)	114	2	1.7	1	0.9
Abdominal hysterectomy (prophylaxis)	716	25	3.5	15	2.1
Other operations (prophylaxis)	284	10	3.5	10	3.5
Total	1,686	53	3.1	32	1.9

There are certain contra-indications to the use of anticoagulants, particularly to the use of dicumarol: (1) Patients with renal or hepatic insufficiency should not receive dicumarol because, in such cases, the anticoagulant effect of ordinary initial doses may be excessive, greatly prolonged and difficult to control. (2) Patients with blood dyscrasias in which there is a tendency to bleeding, and patients who have purpura of any type or subacute bacterial endocarditis, should not be given anticoagulants because of greatly increased risk of widespread hemorrhage. (3) Patients who recently have undergone operations on the brain or spinal cord should not be given anticoagulants, not because the tendency to bleed will be increased, but because of the gravity of even a small hemorrhage at the operative site.

Patients who have ulcers, open wounds or exposed granulating surfaces present an increased risk of bleeding from these lesions if they are given anticoagulants. However, the risk is not prohibitive. More caution is required than is necessary in the absence of the conditions named but, if the patient has or has had thrombosis or embolism, the danger of fatal embolism may be much greater than the danger of serious hemorrhage. As has been said in part before, if drainage tubes have been left in wounds, in the renal pelvis or in the common bile duct, or if an indwelling catheter is in use or a duodenal drainage tube has been inserted through the mouth or nose and is still in place, the irritation of tissue about the tube causes a somewhat increased risk of bleeding but the risk is not prohibitive. Patients with nutritional deficiency may be unusually sensitive to dicumarol.

In the foregoing paragraphs, dicumarol has been mentioned. This substance and heparin constitute the two effective anticoagulant drugs now available. Heparin acts rapidly and the effect subsides within a few hours after administration has been discontinued. Heparin, however, is expensive and the technique of its administration is time consuming. It is effective only when given intravenously or intramuscularly. Intramuscular administration in a slowly absorbed medium has been recommended but such administration is painful; fulthermore, bleeding may take place at the site of injection and the effect is difficult to regulate.

There are two methods for intravenous administration of heparin. The first is the continuous intravenous drip technic whereby 200 mg. of heparin are added to 1,000 c.c. of diluent (either 0.9 per cent sodium chloride solution or 5 per cent glucose solution) and administration of the dilute solution is begun at the rate of 25 drops per minute. The number of drops per minute is then varied by adjusting the clamp on the tube so that the coagulation time of venous blood in a glass tube is maintained at between fifteen and twenty-five minutes. It is necessary to determine the coagulation time every six hours at first, and every twelve hours subsequently, in order to be sure that the proper effect is maintained. The second method of intravenous administration of heparin is to give frequent injections of a fixed amount of a concentrated solution. No determinations of coagulation time are made. In Sweden, a commonly employed dosage is 100 mg. every six hours. At the clinic 50 mg. every four hours have been used. This method does not take into account individual differences in tolerance to heparin. It produces almost total incoagulability of the blood for approximately one hour after each injection and there is a variable period just before each injection when the coagulation time has returned to normal. However, it appears to be effective in prevention of thrombosis. If heparin is to be administered for long periods, such as seven to fourteen days, the continuous intravenous method is preferable. For periods of one to three days, intermittent intravenous injections are preferable.

Dicumarol produces its anticoagulant effect by producing a prothrombin deficiency. It is effective when administered by mouth and it is cheap. The anticoagulant effect of dicumarol is delayed for one to three days after administration has been started and the effect persists for two to several days after administration has been discontinued.[1] Thus, it does not give immediate protection against thrombosis; futhermore, if bleeding should occur, it is less easy to stop the anticoagulant effect than when heparin is employed. Since there is much variation in individual sensitivity to dicumarol, it is absolutely necessary to determine the prothrombin time (Quick) every day and thus to keep informed concerning the effect of the drug and the necessary dosage. The reports of prothrombin time must be consistent and comparable from day to day. To this end it is necessary to use a thromboplastin of consistent potency. Since thromboplastins used in different clinics and hospitals may be of variable potency, and since thromboplastins prepared by the same technique also may vary, it is advisable that the potency of any thromboplastin used in determinations of prothrombin time, as a guide to dosage of dicumarol, be established frequently. Reports of prothrombin time preferably are expressed as per cent of normal prothrombin.[9] These values, calculated in seconds and converted into percentages, can be determined for any thromboplastin by ascertaining the prothrombin time for undiluted normal plasma and for normal plasma diluted to various concentrations with 0.9 per cent sodium chloride solution, or preferably diluted with prothrombin free plasma. The important prothrombin times to know for any thromboplastin are those for 100 per cent, 30 per cent, 20 per cent and 10 per cent normal plasma.

The simple schedule of dosage for dicumarol, which has been used successfully at the clinic for more than four years, is as follows. The entire amount for one day is given in a single dose. The first dose is 300 mg. Thereafter, 200 mg. are given on each day that the value for prothrombin is greater than 20 per cent of normal prothrombin. On days that the value for prothrombin is less than 20 per cent of normal no dicumarol is given. If the value for prothrombin falls below 10 per cent of normal and remains there for more than one day, indicating more than usual sensitiveness to dicumarol, 20 to 30 mg. of menadione bisulfite are given intravenously and thereafter only 100 mg. of dicumarol are given to that particular patient on days when the value for prothrombin is greater than 20 per cent of normal. If severe bleeding occurs, an intravenous injection of 60 mg. of menadione bisulfite, and one or more transfusions of 500 c.c. of freshly drawn citrated blood, are given daily until bleeding ceases.

For several years dicumarol has been used almost entirely instead of heparin as an anticoagulant at the clinic because of its cheapness and the simplicity of its administration. Heparin occasionally is given by intermittent intravenous injection in addition to dicumarol for the first few days, to cover the period between institution of treatment with dicumarol and development of adequate prothrombin deficiency. In such a case, administration of heparin is stopped when the value for prothrombin is less than 20 per cent of normal. The blood for this test should be withdrawn four hours after an injection of heparin has been given. This combination of heparin and dicumarol is theoretically the best anticoagulant therapy. However, at the clinic it has been used only in the postoperative period, in the presence of severe pulmonary embolism and associated shock or cardiac embarrassment. In spite of the lag in effect, the use of dicumarol alone has been effective in cases of thrombophlebitis and in the presence of small pulmonary infarcts.

Anticoagulant therapy for postoperative thrombophlebitis or pulmonary embolism should be begun as soon as the diagnosis has been made and should be continued until the patient has been ambulatory several days and has been dismissed from the hospital. It is not necessary, because patients are receiving anticoagulant therapy, to keep them in bed longer than usual. Ordinarily, and unless there is another reason for keeping them in bed, they are allowed up as soon as the signs and symptoms of pulmonary embolism or thrombophlebitis have subsided; this usually is seven to twenty days after the onset of the complication. When given prophylactically, anticoagulant therapy should be started on the second or third postoperative day.

TABLE II. NONFATAL POSTOPERATIVE PULMONARY EMBOLISM AND INFARCTION

	Control group;[4] anticoagulants not administered		Dicumarol administered	
	Number	Per cent	Number	Per cent
Total cases	678	100	292	100
Subsequent venous thrombosis, pulmonary embolism or infarction	297	43.8	3	1.0
Subsequent fatal pulmonary embolism	124	18.3	1*	0.3

*After prothrombin had returned to normal.

TABLE III. POSTOPERATIVE THROMBOPHLEBITIS

	Control group;[5] anticoagulants not administered		Dicumarol administered	
	Number	Per cent	Number	Per cent
Total cases	897	100	280	100
Subsequent venous thrombosis, pulmonary embolism or infarction	227	25.3	8*	2.8
Subsequent fatal pulmonary embolism	51	5.7	0	0

*One case of minor pulmonary infarction and seven cases of thrombophlebitis in three of which the value for prothrombin was greater than 30 per cent when the recurrence developed.

The effectiveness of heparin as an anticoagulant in the treatment and prevention of postoperative venous thrombosis and pulmonary embolism has been attested by several reports.[6,7,11,12] The effectiveness of dicumarol as an anticoagulant for the same purpose, in 1,288 cases encountered at the Mayo Clinic is shown in Tables II, III, and IV. The 1,288 cases include 756 cases previously reported[2] and 532 cases not previously reported. It is significant that in the entire group there has been only one fatal pulmonary embolism and this occurred more than a week after administration of dicumarol had been stopped and the prothrombin had returned to normal. The cases of thrombophlebitis include all those in which a clinical diagnosis was made and the lesions were in various veins: iliofemoral, long and short saphenous, and deep veins of the calf of the leg. They also include those in which there was maximal or minimal periphlebitic reaction, many of which might have been called cases of phlebothrombosis by those who make such a distinction. Lehmann and Evans also have reported good results with dicumarol in treatment of postoperative venous thrombosis and pulmonary embolism in fairly large series of cases.

TABLE IV. ABDOMINAL HYSTERECTOMY

	Control group;[3] anticoagulants not administered		Dicumarol administered prophylactically	
	Number	Per cent	Number	Per cent
Total cases	5,370	100	716	100
Any venous thrombosis or pulmonary embolism	230	4.3	2*	0.3
Fatal pulmonary embolism	42	0.7	0	0

*Both minor thrombophlebitis only.

Summary

Anticoagulant therapy with heparin or dicumarol is effective in the prevention of postoperative thrombosis and embolism and in prevention of further thrombosis, and therefore of embolism, in cases in which one or both of these complications already have occurred. If anticoagulants are properly given, the risk of serious bleeding is minimal and, if such bleeding occurs, it almost always can be controlled easily. At the Mayo Clinic it is felt that anticoagulant therapy with dicumarol, and occasionally with additional preliminary administration of heparin, is the treatment of choice for prevention of postoperative pulmonary embolism in the folowing groups of cases: (1) those in which one nonfatal pulmonary embolism or pulmonary infarct develops; (2) those in which clinical evidence of thrombophlebitis or venous thrombosis develops and (3) those in which there is a history of thrombophlebitis or pulmonary embolism having occurred prior to the immediate operation.

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NEONATAL DEATHS FOLLOWING TERM DELIVERIES, 1937-1945

Cause and Effect Relationships

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GREAT strides have been made the last fews years in reducing infant mortality, yet there has been little or no change in infant mortality under two weeks of age. It has been very disturbing while on the very active obstetrical service at St. Mary's Hospital to see newborn infants appearing perfectly normal, whose heart sounds were good during labor, whose umbilical cords were pulsating when born, yet, who died because initiation of respiration could not be accomplished. An investigation of these cases was then undertaken to attempt to determine causes of newborn mortality within St. Mary's Hospital. A complete review of newborn deaths since 1937 was undertaken. It was not possible to check charts before 1937 since at that time Standard Nomenclature cross-indexing was started here. A review of the literature was then completed and correlated with our findings.

Difficulty was encountered in reviewing the cases since many were inadequate and incomplete in the following factors:

1. Incomplete records of length of the 1st and 2nd stages of labor and incidents relating to labor.
2. Incomplete records of length of time that anesthetics were used, what stage of anesthesia patient was in and whether patient was ready to deliver but was anesthetized until doctor's arrival.
3. Exact time from birth until child took his first breath and the length of time each method of resuscitation was used.
4. Whether any method was used to prevent delivery until doctor's arrival.

Table I shows the form followed to investigate fetal deaths. Both the mother's record and the baby's record were studied in each case. Prematures were classified as those under 2500 gm. or from 35 to 47 cm. in length, with length taking precedence over weight. Usually, the attending physician's classification of prematurity was taken.

A liveborn was considered as one in which there was any sign of fetal life such as heart beat, or respiration attempts, or pulsating umbilical cord.

TABLE I. POINTS COVERED IN THE ANALYSIS OF NEONATAL DEATHS

- Gravida of the mother
- Prenatal care
- Artificial rupture of membranes
- Pituitrin
  - How much given
  - When given
- Hykinone
- Time and amount of medication given predelivery
  - Nembutal
  - Seconal
  - Morphine sulfate
  - Demerol
  - Sodium pentothol
  - Dilaudide
  - Scopolamine
- Length of labor
- Anesthesia for delivery
- Type of delivery
- Difficulty in resuscitation of baby
- Methods of resuscitation used
  - Artificial respirations
  - Contrast baths
  - Coramine
  - Adrenalin
  - Lobeline
  - Caffeine sodium benzoate
  - Digitalin
  - Oxygen
  - Carbon dioxide
- Condition of baby at birth
- Type of monstrosity
- Length of life
- Clinical cause of death
- Pathological report

TABLE II. PERCENTAGE OF FULL-TERM AND PREMATURE DEATHS

	No. of Births	Stillborn %	Term death %	Premature death %
St. Mary's Hospital	9,053	1.9	.93	14.57
Chicago Lying-In[14]	17,728	2.3	.80	18.1

The total number of births from January, 1937, until November, 1945, was 9,053. The number of living term births was 8,537, and there were 516 premature births. There were 80 deaths in full-term deliveries or .93 per cent, and there were 141 premature deaths or 27.32 per cent. The number of neonatal deaths for the total period was 221 of which 36.19 per cent were full-term babies and 63.8 per cent were premature. The number of stillborns for the total period was 177, a grand total of 9,230 deliveries of which 1.9 per cent resulted in stillbirths (Table II).

Our figures compared favorably with those reported in current literature except for premature deaths in which our figures were greater. An analysis of the weights of the infants included under "prematures," however, showed that forty-two (29 per cent) weighed less than 1000 gm. An additional sixteen (11 per cent) weighed between 1000 and 1249 gm., while nineteen more (13 per cent) fell into the 1250-1499 gm. classification. In fairness to all concerned, it seemed permissible to exclude these seventy-seven babies weighing less than 1500 gm. from the mortality

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TABLE III. MORTALITY AMONG PREMATURE INFANTS

Birth Weight	Deaths	% of 141
Under 1000 gm.	42	29
1000-1249 gm.	16	11
1250-1499 gm.	19	13
1500-1749 gm.	18	12
1750-1999 gm.	16	11
2000-2500 gm.	25	17
Gross mortality		27.3%
Corrected mortality		14.6%

TABLE IV. NEONATAL MORTALITY IN RELATION TO METHOD OF DELIVERY

	No.	St. Mary's	Chicago Lying-In[14]	Chicago Lying-In[13]
Nat. cephalic	40	.559%	1.1	1.2
Low forceps	14	1.001	1.3	1.1
Mid & Hi forceps	2		5.0	
Breech	10	3.33	7.1	4.6
Cesarean	3	1.7	4.1	7.6
Version & Extraction	0	0	13.4	2.9
Inadequate Records	11	.128		14.5

TABLE V. PERCENTAGE OF EACH PATHOLOGICAL FINDING IN FULL-TERM BIRTHS

	St. Mary's	Chicago Lying-In[14]
Malformations causing death	31.25%	24.2%
Intracranial hemorrhage	23.75	23.4
Anoxemia (Including petechiae, atelectasis, asphyxia)	12.5	12.2
Edema of the brain	7.5	1.7
No pathological lesion found	6.25	5.0
Inadequate records or not autopsied	18.75	...

percentage, since a high mortality is usually expected in this group. Hence, on a basis of the remaining sixty-four deaths, our corrected prematurity mortality was found to be 14.57 per cent (Table III). Since only full-term births were considered in this study, there was no further attempt to evaluate the care of these prematures.

In order to further evaluate the causes of death in full-term infants, a further subdivision was made on a basis of type of deliveries and compared with the Chicago Lying-In Hospital (Table IV).

There was a total of seven, 151 cephalic full-term babies born since 1937 until December, 1945; 1,507 by instrument delivery; 300 by breech; 24 by version; 176 by cesarean section.

Our figures compared favorably in all types with the Chicago Lying-In Hospital. Deaths of cephalic presentations were .559 per cent with forceps next with 1.001 per cent. The percentage of deliveries with low, mid, and high forceps individually was not determined.

The highest death rate was in breech deliveries, 3.33 per cent. This was also evident in other hospital reports. Cesarean sections accounted for 1.7 per cent, and there were no deaths with the version and extraction method. Records were inadequate in 11 cases or in 14.6 per cent of all our deaths. Since only 80 deaths occurred in our study, it is indeed regrettable that these records were not complete.

It was interesting to note the percentage totals grouped as to the pathological findings in those cases coming to autopsy as shown in Table V. Malformations headed the list with 31.25 per cent. Intracranial hemorrhage was next with 23.75 per cent. Anoxemia which included those babies showing at autopsy petechial hemorrhage, atelectasis, and asphyxia, was 12.50 per cent. No pathological lesions were found in 6.25 per cent of the cases. Records were inadequate in 18.75 per cent. Our statistics practically coincide with those of the Chicago Lying-In Hospital. Anoxemia and intracranial hemorrhage are still the main problems to combat in preventing neonatal deaths according to these figures.

It was discovered that the greatest percentage of deaths from anoxemia occurred in breech deliveries, 1.33 per cent, and the highest single percentage of intracranial hemorrhage was also in breech deliveries, 1.33 per cent (Table VI). Cephalic presentation had the lowest incidence of either anoxemia or intracranial hemorrhage. The number of cesarean section cases was numerically insufficient. It was not possible for statistical consideration to compare our figures with the Chicago Lying-In Hospital since theirs included premature deliveries whereas ours are limited to full-term births.

Since Vitamin K has been used prophylactically to prevent hemorrhage in the newborn, an attempt was made to determine if there was any difference between the number of deaths due to

TABLE VI. ANOXEMIA AND INTRACRANIAL MORTALITY

Type of Delivery	Total Cases	Anoxemia		Intracranial	
		Deaths	%	Deaths	%
Cephalic	7,151	17	0.23%	8	0.1118%
Forceps	1,507	4	.265	11	.729
Breech	300	4	1.33	4	1.33
Cesarean	176	1	.568	0	
Versions	24	0	...	0	...

TABLE VII. VITAMIN K IN RELATION TO INTRACRANIAL HEMORRHAGE

	Vitamin K			No Vitamin K		
	No.	Deaths	%	No.	Deaths	%
St. Mary's,	19	2	10.5%	61	19	31.1%
Beck et al.	985		0.3	981		1.6

intracranial hemorrhage in mothers receiving Vitamin K and those not receiving Vitamin K (Table VII). It would seem by our statistics that Vitamin K gave marked protection against intracranial hemorrhage. Beck et al.[1] by their figures show a similar ratio of protection.

We were interested in determining whether pituitrin given during labor would have any effect on fetal mortalities. Eighteen mothers received pituitrin in which there were full-term fetal deaths. Five cases were malformations, making a total of thirteen cases which died of asphyxia, intracranial hemorrhage, or unknown cause. Sixty-seven cases or 24.07 per cent of all full-term deaths showing intracranial hemorrhage, asphyxia, or dying of unknown cause received pituitrin. Since we did not investigate the cases in which the mothers received pituitrin and their babies did not die, we had no control by which to evaluate statistically the dangers of pituitrin to the newborn. Two causes of death in our series with the highest percentage were intracranial hemorrhage and anoxemia in which asphyxia seemed to be the primary factor.

Intracranial Hemorrhage

Intracranial hemorrhage is the second highest cause of fetal mortality in the literature and first highest cause in our analysis. The causes of intracranial hemorrhage are multiple. One of the most often considered is forceps deliveries. Any type of operative procedure, with the exception of the cesarean section, has a high incidence of intracranial hemorrhage.

Mechanism.—The mechanism of intracranial hemorrhage is well described by McGuiness. He states that forces acting on the head are in an anterior-posterior-lateral direction. These are compensated for by a vertical diameter lability, i.e., by sutures overlapping. This causes cerebral spinal fluid to be pressed out and the medulla oblogata to be pushed into the foramen magnum. The falx and tentorium are the main resisting forces and the greatest stress is applied on a rectangular area at the junction of free margin of these two structures.

Technique in Mechanical Delivery.—If forceps are applied with blades well down on the mandible and the pull on the forceps is made augmenting uterine contractions, then they act as protection for the fetal skull. However, forceps applied in breech delivery on the after-coming head invite cerebral trauma since pressure is exerted on the biparietal diameter which is the most vulnerable.[9] Also, a quick second stage may cause damage due to the sudden molding of the head.

McPhail and Hall also feel that unless the second stage is unduly prolonged, the practice of purely conservative obstetrics produces fewer apneic babies.[10]

Artificial Rupture of Membranes.—Bundeson, et al., in their study of 3,725 deaths, concluded that "dry labor" seemed to be associated with intracranial hemorrhage more often than in association with other neonatal deaths; therefore, artificial rupture of the membranes should only be done when indicated.[3] This is confirmed by other reports in the literature.

Deliberate Delivery Prevention.—It is the custom in many obstetric wards in private hospitals to delay delivery by preventing the head from delivering by either pressure against the head with the hand or by closely approximating the legs on the delivery table. The patient may or may not be anesthetized. This practice is not to be condoned. Such practice may well promote intracranial hemorrhage; or cause enough edema of the brain to decrease its blood supply. Clifford states that the practice of prolonging the second stage of labor by pressure on the perineum accompanied by general anesthesia should be discouraged as it also may produce serious asphyxia.[4]

While it is understandable that the convenience of the obstetrician comes into the picture, head nurses should not be expected to have the expectant mother deliver at just the opportune moment.

Pituitrin.—Bundesen, et al., in a study of 3,725 deaths, discovered that pituitrin was given twice as frequently to mothers of infants which died under two weeks of age as compared to those infants which died from one to eleven months and whose mothers had received pituitrin. He states that there is a twofold danger with the use of pituitrin: (1) rupture of the uterus, (2) violent labor. Violent labor is very conducive to intracranial hemorrhage, thereby causing asphyxia.

A multitude of evidence is found in the literature about the danger of pituitrin. For obstetrical usage pituitrin is a dangerous drug and needs the closest supervision by the obstetrician. If given, an anesthetic should always be on hand to anesthetize the patient should her uterine contractions become too severe or, as is sometimes the case, should she get tetanic contractions of the uterus.

Vitamin K.—Since our statistics seemed to show some protection with the use of Vitamin K, it was interesting to note the varied reports in the literature.

Extensive research has proved without doubt that in newborns Vitamin K prolongs the prothrombin time. During the first, second, and third day of life, prothrombin levels decrease and steadily increase the fourth, fifth, and sixth day until they return almost to "cord normal" by the seventh day.[15] This has also been confirmed by statistics by E. Potter[12] and A. C. Beck, et al.[1] Sanford, et al.[15] and Fitzgerald and Webster state that in spite of low prothrombin time the blood of newborns coagulates faster than in adults and that there are other known substances that cause cord blood to coagulate.[15]

Hellman, Shettler, and Eastman state that prothrombin levels in newborn infants are from 14-39 per cent of normal. Several days after delivery, many infants die of intracranial hemorrhage. In Craig's study of 126 neonatal deaths intracranial hemorrhage occurred mainly between the second and sixth day. This is most important especially in cases of oozing. In a series of 776 cases studied in which one half were given Vitamin K and the other half were not given Vitamin K with the group as equal as possible, there were almost three times as many deaths in this group not receiving Vitamin K with two times as many cases of retinal hemorrhages.[6] When used, Vitamin K should be given every five hours of labor and at least five hours before delivery if it is to be of material benefit.

Contrariwise, Sanford, et al., states that in a series of 1,693 newborn babies, 711 of which received Vitamin K, there was no reduction in incidence of hemorrhage.[15] This was also brought out by statistical analysis of 13,290 cases of newborns over a four-year period of study by E. Potter in which there was no decrease in infant mortality in those cases receiving Vitamin K.[12]

Infants dying of cerebral hemorrhage had low Vitamin C according to Fleming and Sanford. Vitamin C is transferred from mother to child by foods or medicines.[5]

Anoxemia

Those cases showing at autopsy examination evidence of petechial hemorrhage, atelectasis, and asphyxia were included in the classification of anoxemia. Since asphyxia contributes toward atelectasis and petechial hemorrhage, investigation of the factors leading to asphyxia was indicated.

Experimental Physiology.—It is important to interpret physiologically this respiration of the fetus *in utero* in order to better determine the causes of asphyxia. Eastman states that respiration is biologically established in intrauterine life as is cardiac, renal, and hepatic cellular activity. Therefore the initiation of respiration in newborns tends to establish what is already a permanent and vital function.[8]

Experiments by Snyder in which he injected India ink into the amniotic fluid in cord sectioned full-term rabbits showed that, due to intrauterine rhythmic respiratory movements of the fetus, a tidal flow was maintained of amniotic fluid between the pulmonary alveoli and the amniotic sac contents. India ink was found in the alveoli of rabbits and the amount of ink was in direct proportion to the rate of fetal respiration.[17]

During postmortem examination masses of cellular, fibrillar and amorphous debris are found in alveoli and terminal bronchioles. This is confirmed by Paterson and Farr.[11] If any bacteria are present in the amniotic fluid, it could well explain fetal intrauterine pneumonia.[18] This debris is present in stillborns, probably because of agonal respiration of the fetus. If the newborn's first breath is a healthy gasp, it tends to dislodge obstructive debris. However, if respiration is weak, the debris decreases respiration which in turn prevents it from being dislodged and so a vicious circle is set up.[11] Thus, an initial strong gasp snaps the alveoli open and is beneficial to the child[16]; also, since the alveoli are filled with amniotic fluid and are partially dilated, it is necessary for the child to breathe in order to increase the size of the alveoli and thereby prevent it from drowning.[18] After birth, aspiration of the pharynx and nostrils and the Trendelenberg position facilitates a removal of this fluid.

However, once air is in the alveoli, the patency therein must be maintained. Coryllas and Birnbaum state that trapped air may be entirely absorbed. Peskin and Fineman have proved that if the vessels to the lung in which air is trapped in the alveoli are occluded, air will not be absorbed. Since pure gases are removed quickly from the alveoli, it aids to have the child breathe C_2, CO_2, and atmospheric air to prevent too sudden absorption of gases in the alveoli serviced by partially occluded bronchi.[11]

Causes of Asyhyxia.—Marchetti divided asphyxia neonatorum into two groups according to origin, intra-uterine and extra-uterine. Intrauterine factors are subdivided into maternal and fetal factors. Maternal factors are placental circulation, administration of drugs to the mother during labor, protracted labor, prolonged second stages, hemorrhage, convulsions, and death of the mother. Fetal factors are pressure upon the head, pressure on the cord, winding of the cord around the baby's neck. Extra-uterine factors are usually anesthetics, analgesia, primary disease, malformation of vital organs[8], sudden release or compression of the head passing through the birth canal.

Anesthetics.—Pressure from the laity has forced the medical profession to increase the use of analgesic and anesthesia.

An analysis of anesthetics was not attempted due to the incompleteness of our records. Literature records the results of much investigation upon the subject of anesthesia and its effect on newborns. During labor, since the fetus is in a relative state of anoxia and apnea, any medications that cause a decrease of respiration or O_2 intake on the part of the mother will also have an effect on the child.

Eastman states that mixtures of 15 to 85 per cent of oxygen and nitrous oxide, respectively, for periods of five minutes cause various degrees of anoxemia fetalis, but the newborn is not harmed. However, oxygen and nitrous oxide 10 to 90 per cent, respectively, for a length of time greater than five minutes causes a marked degree of fetal anoxia in about one baby out of three.

Smith states that cyclopropane dilates the capillary beds and the blood circulates so fast through the capillary bed of the placenta that the fetus fails to get an adequate supply of oxygen. They were able to drop the mortality from cesarean section in full-term pregnancies from 54.2 to 16 per cent when no premedication was given to the mother and when the baby was delivered four minutes from the beginning of anesthesia.[4]

McPhail and Hall found that any trauma or increased pressure on the baby's head prevents free circulation of the cerebral circulatory system and as a result less oxygen is carried to the brain and may produce anoxia with resulting degenerative changes in the cerebral cells and is probably the most frequent cause of neonatal anoxia. A baby born of a mother showing signs of anoxia would be very likely to be apneic at birth, and the study proved that a high incidence of severe apnea was noted in babies born of mothers who became excited. They hypothesize that excitement as a state of anoxia.[10]

Eastman states that asphyxia neonatorum is an example of profound oxygen want; and for this reason, McPhail and Hall give oxygen freely to the mother during the second stage of labor and as long as the cord pulsates.[4]

Henderson, Foster, and Eno state that in a series of 975 consecutive deliveries in which both local anesthetic (infiltration) and general anesthetics were used the use of local anesthetic whenever possible will reduce the natural hazard of birth. General anesthesia definitely decreases the respiratory response of the newborn.[7]

Analgesics.—Analgesics were not considered in our report since demerol is now currently used but has been used such a short time that no statistical evaluation was possible. No reports have yet appeared about the results of the use of demerol in relation to asphyxia of newborns. Of the currently useful analgesics, demerol seems to have the least effect on the respiration of the fetus. However, reports are present in the literature of respiratory depression of adults with the use of demerol. Clinically, analgesia does not decrease the oxygen content to the mother or fetus. However, if respiratory depression from drugs exists, then asphyxia will develop as placental circulation decreases.

Wilson states that most drugs administered to the mother pass to the child and desensitize the respiratory centers of both the mother and fetus. Irving and his associates show that of all children born of undrugged mothers, less than 2 per cent fail to breathe spontaneously; however, drugs which are frequently used have such a strong depressing action on the children that 35-68 per cent fail to breathe immediately upon birth.[20] Thus it is clear that despite hesitance on the part of attending physicians to admit that some surcease maternal medications challenge the right of the child to live, yet the figures speak for themselves.

Cerebral Effects of Asphyxia.—It is a well-recognized fact that severe asphyxia may lead to a residual effect on brain tissues. Clifford, in his studies, describes the stages of brain damage:

Stage I—Interference with placental circulation increases blood vessel congestion of the fetus.

Stage II—This, in turn, causes liberation of edema fluid into tissue spaces and body cavities.

Stage III—There then occurs liberation of a number of red blood cells either through diapedesis or actual rupture of small blood vessels resulting in:

1. Petechiae
2. Alveolar hemorrhage
3. Microscopic to large amounts of red blood cells in the cerebrospinal fluid.

Stage IV—Actual necrosis then takes place showing changes from areas of ganglion cell degeneration to widespread encephalomalacia.

These sequences complicate resuscitation, alter the respiratory rate and rhythm, induce muscular atonicity, and induce convulsive movements.

In addition to the brain, when edema collects in the lungs, it renders them incapable of normal expansion and results in atelectasis with clinical manifestations.[4]

W. F. Windle, in an excellent study of guinea pigs which have been subjected to various degrees of asphyxia, has proved by maze tests and microscopic examination of their brains that there is a definite correlation between asphyxia and brain damage. He states, "The possibility of inferior mentality, diminished learning ability, or mental dullness as sequelae of anoxia at birth should not be dismissed lightly."[21]

Treatment of Asphyxia.—Since some degree of asphyxia is present regardless of the care in the handling of obstetric cases, the immediate emergency care of newborns is of paramount importance. Methods in common use here at the hospital are: aspiration of mucus with bulb syringe, hot and cold baths, ether applied to skin of infant, mouth-to-mouth breathing, coramine and lobulin (intramuscular and intravenous), and, only in too rare occasions, intratracheal insufflation. Varing results are obtained by these measures, and, with the exception of stimulants and intratracheal insufflation, the results in severe asphyxias, particularly asphyxia pallida, are discouraging.

Marchetti states that the so-called tubbing of the baby is more injurious than helpful.[8] A newborn in a state of asphyxia is already in a state of shock and plunging him into a tub of cold water only increases his state of shock. Slapping and rough treatment of the child are definitely to be condemned.[8] This is the general consensus of opinion of staffs of teaching centers and larger hospitals.

Wilson, Torrey, and Johnson in an analysis of 16,000 live births, in which there were 381 cases of asphyxia, including severe asphyxia pallida, studied the effect of all common methods of resuscitation and intravenous stimulants. Their experiments were well controlled and well recorded.

Their opinion in regard to artificial respiration applied to the chest by manual means is that it obviously does no good to further compress a solid fetal lung; and, if any air is present in the bronchial tree, it will be expelled restoring the original atelectasis. Since the respiratory center must be stimulated, and peripheral stimuli can in no way reach the center, the stimuli must needs be chemical in nature.

Mouth to mouth insufflation stands condemned because of the danger of infection to the child. Also, air usually enters the esophagus instead of the trachea. This has been confirmed by other investigators. Also, in experiments on newborns that died during delivery, autopsies proved that when pressure from 4 to 18 mm. of water were used to aerate the lungs, no air had entered the alveoli and, if present, there were usually blisters beneath the pleura and torn pulmonary tissue. Damage can occur with the use of only "cheek muscles." When carried out, a graduated manometer should be used.

The conclusion was that while the bronchial tree can be extended, chest walls expanded, and the diaphragm displaced, the lung tissue itself cannot be aerated adequately even by pressure sufficient to cause injury or destruction. This has been confirmed by Murphy and Bower in 1933 in a series of children examined postmortem in which pressure of 8 to 10 cm. of water were used.[20]

However, these conclusions, while no doubt true for cases of atelectasis, may not hold for mild asphyxia—newborns who fail to breathe but do not have atelectic lungs. Since, as was before mentioned, newborn infants have alveoli containing amniotic fluid and are, therefore, partially distended, it is hard to realize why air could not be easily forced into these expanded alveoli.

Wilson, et al., further state that resuscitators are of no value in severe cases and are contraindicated if they employ suction. Inhalators are of value only in the case of the poorly breathing baby. Eastman states that the respiratory center becomes insensitized in the last few months of uterine life to increasing CO_2 tension. Since O_2 sensitizes the center and CO_2 stimulates it, O_2 should be administered to the newborn, especially in asphyxia. A different view is taken by Henderson who states that increased CO_2 is necessary because of decreased sensitivity of the respiratory center to CO_2 tension.

The inhalator is the best and safest method of saving the life of the asphyxiated but breathing baby. Also, it is of value in preventing atelectasis and pneumonia.

Intubation and Insufflation.—Wilson, et al., have concluded that alveoli cannot be distended by direct full expansion of lungs by forceful injection of gases into the trachea. They feel intubation is of assistance for the following reasons:

1. Complete aspiration of mucus and debris from bronchi and tracheae.

2. Bronchial tree, larynx, and pharynx can be distended and chest increased in size making, therefore, absorption of oxygen more rapid. Babies have been kept alive for two hours by this method although at autopsy there were no expanded alveoli. It seems then that the absorption of gases was by the mucosa of the bronchi and tracheae.

3. Increased dilatation of bronchi brings into play the Hering Breuer reflex. This reflex may be absent in some cases but will return as circulation improves which may come about by absorption of O_2 by mucosal lining of trachea and bronchi.

Therefore, intratracheal intubation should be done on all severely asphyxiated newborn babies.[20]

Intubation can be done by means of the Flagg laryngoscope or by guidance of the tube into the trachea with the little finger. This was carried out here at St. Mary's Hospital in several cases in which the newborn progressed from a state of asphyxia livida to asphyxia pallida and was revived only by using intratracheal intubation.

There is evidence pointing to the fact that bronchoscopy can be carried out in newborns and even in prematures without ill effects.[22]

Intravenous Resuscitation.—Extensive study was done by Wilson et al., with all types of intravenous stimulants. Lobeline hydrochloride was found to be most effective and safest. They proved by their experiments that alpha-lobeline will:

1. Heighten the respiratory efficiency of a normally breathing baby.
2. Rapidly overcome respiratory depression due to morphine.
3. Produce such a marked expansion of the thoracic cavity as to greatly reduce if not entirely remove atelectasis.
4. Actually initiate respiration in serious asphyxias.

However, to get the best result, a definite method should be followed and will be given subsequently. Lobeline decreases the threshhold of the respiratory center to carbon dioxide. Overdosage will result in temporary apnea and fixation of the chest and diaphragm in the inspiratory position.[20]

In a review of the literature, Biggs was of the impression that intracardiac stimulants of epinephrine are most favored.[2]

Technique of Resuscitation

1. As soon as head is delivered, wipe the mucus and fluid from infant's nose and mouth. Aspirate at that time with soft rubber bulb syringe.

2. Deliver the rest of the child and if the child is in mild asphyxia and is breathing, place it in an incubator or warm blankets in about 30 degree Trendelenburg position; and Wilson, et al., include also the use of a mask with O_2 and CO_2.

3. If the child is not breathing and the asphyxia is

very severe, insert a soft rubber catheter into the trachea and aspirate the debris and fluid. Attach $CO_2:O_2$ under 10 to 12 mm. of water pressure with outlet valve attached through which the child exhales.

4. From 1/20 to 3/20 gr. alpha-lobeline may be injected into the umbilical vein about 7 to 8 cm. from baby's body. Then a clamp is applied distally to the injection. Slowly "milk" the lobeline into the child's body until a gasp occurs, then clamp the umbilical cord at the usual distance from the child's body. If there is no effect of lobeline when the entire amount is stripped into the body, it can be taken for granted there will be no results with lobeline. Other stimulants can be tried such as epinephrine which is considered excellent.[20]

5. In the most extreme cases, epinephrine injected into the heart is beneficial in a few instances.[19,20]

Above all, the child should be kept warm and the mucus removed.

Summary

1. This survey objectifies the need of more complete obstetrical records. Careful charting of the time required for the various stages of labor; the relationship of the degrees of maternal pain and the response to the chosen analgesics and anesthetics or plane of anesthesia required—all would expedite recurring analyses of this type and permit salutary deductions as to delivery methods.

2. Our statistics compare favorably with those of the Chicago Lying-In Hospital.

3. Intracranial hemorrhage and anoxemia remain our greatest problem in neonatal death.

4. Low forceps applications are associated with a slightly increased percentage of deaths over natural spontaneous delivery.

5. Instrument delivery, artificial rupture of membranes, pituitrin, and mechanical delaying of spontaneous delivery all contribute to intracranial hemorrhage.

6. Vitamin K is inexpensive and harmless and should be used routinely since it increases prothrombin time.

7. Local infiltration anesthesia promotes the lowest fetal mortality. However, nitrous oxide and oxygen given only with the pains is a safe anesthesia.

8. All analgesics may be considered as possible factors in neonatal deaths.

9. In severe cases of asphyxia, the following three methods will give the best results:

(1) Intratracheal intubation and insufflation.

(2) Administration of $CO_2:O_2$ through an intratracheal tube at 10 to 12 mm. of water pressure.

(3) Intravenous administration of 1/20 to 3/20 gr. lobeline hydrochloride.

10. Intratracheal intubation deserves more extensive trial and usage.

11. A simple inhalator should be available for infants with mild asphyxia having shallow breathing.

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CLINICAL-PATHOLOGICAL CONFERENCE

SUBACUTE BACTERIAL ENDOCARDITIS WITH RUPTURE OF SPLEEN

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DR. RALPH ANDERSON: This case, A-46-758, is that of a seventy-two-year-old man who was admitted to the Minneapolis General Hospital on April 17, 1946, complaining of an inability to talk. He had been eating his meals in a restaurant and lately had been unable to order any food. This speech defect had been gradually getting worse during the past three months. Physical examination on admission revealed a well developed and well nourished white male. His pupils reacted to light and accommodation. The left pupil was larger than the right. There were extensive dental caries. He was unable to write or speak plainly. Blood pressure was 140/70. Temperature was 100 degrees. His heart tones were normal. The lungs revealed nothing of note. Abdominal examination revealed no masses or tenderness. His cranial nerves were normal. His deep reflexes were normal but the cremasteric reflexes were hypo-active. The Babinski test was negative. His co-ordination was normal. Sensory examination revealed nothing of note. Blood serology was negative. An x-ray of his chest revealed no signs of pulmonary pathology. Hemoglobin was 55 per cent (Sahli); red blood count was 3,000,000; leukocyte count was 5,800 with 61 per cent neutrophiles. A urinalysis showed a specific gravity of 1.024, a trace of albumin, negative sugar, numerous red blood cells, a few leukocytes, and an occasional hyaline and granular cast. The clinical diagnosis was motor aphasia due to a cerebrovascular accident.

The patient's condition showed little change. He ran an irregular fever that varied from 102 to 99 degrees. Another urinalysis on April 23 revealed a negative sediment. On April 26, he complained of abdominal pain. He was found on the floor by the side of his bed. When put back to bed, he was very restless and tossed about. His color was ashen and his pulse was imperceptible. He expired soon afterwards on April 26, 1946.

PHYSICIAN: Was the neurologist able to locate the position of the cerebral lesion responsible for the speech difficulty?

DR. RALPH ANDERSON: Yes, the lesion was thought to be in the vicinity of Broca's area in the left cerebral hemisphere and either an infarct or hemorrhage.

DR. HERTZOG: This case is not as simple as it seems. You must remember that he had anemia, fever and hematuria. There was also considerable abdominal pain just prior to death.

DR. ALBERT CANFIELD: This case would not be presented at this conference if it were only a cerebral hemorrhage or infarct. The anemia, fever, and hematuria suggest a bacterial endocarditis. Was a blood culture taken?

DR. HERTZOG: A blood culture was not taken. One has to keep in mind that it is not unusual to have symptoms referable to an infarct in either the brain, kidney, or spleen as the first sign of bacterial endocarditis. Dr. Vandersluis will give the autopsy findings.

Autopsy

DR. CHARLES VANDERSLUIS: The body of this seventy-two-year-old male was wasted and thin. The abdomen contained approximately 2,000 c.c. of liquid and clotted blood. The source of the hemoperitoneum was a large oblique tear on the surface of the spleen. The spleen contained old and recent infarcts. A large hemorrhagic infarct had ruptured and given rise to the fatal intra-abdominal hemorrhage. At the time of the autopsy the possibility of the hemorrhage arising from a ruptured angioma of the spleen was considered as a possibility as the whole organ was soft and bloody. However, microscopic sections exclude an angioma and confirm the diagnosis of infarction.

The heart weighed 330 grams. The mitral valve showed thickening and rigidity of the leaflets as one sees in an old rheumatic valvulitis that has not produced sufficient deformity to result in functional impairment of the heart. There was a large fresh vegetation attached to the auricular surface of the mitral valve as one sees in bacterial endocarditis. The brain showed an oval depression measuring 3 x 3.5 x 1.5 cm. along the supremarginal gyrus in the left parietal lobe above the Sylvian fissure. Microscopically this proved to be an infarct that we have reason to believe was on the same basis as those in the spleen; namely, emboli from the large vegetations of the mitral valve. The only other significant findings were the kidneys. They showed an embolic type of glomerulonephritis as frequently seen with bacterial endocarditis.

DR. HERTZOG: As far as I know this is the second case of a ruptured spleen associated with bacterial endocarditis that has occurred in this hospital. Dr. Nesse will give a short review of the literature on non-traumatic ruptures of the spleen.

DR. GERHARD NESSE: Rupture of the spleen is a comparatively rare occurrence. In Harlem Hospital in New

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From the Minneapolis General Hospital, A. J. Hertzog, Pathologist.

York City the incidence of traumatic rupture of the normal spleen was one case in every 666 accident admissions.[16] Spontaneous rupture must be far less common. Spontaneous rupture occurs almost invariably only in pathological spleens, although cases have been reported in which an apparently normal spleen ruptured without trauma.[6,7] Some authors like Roettig[13] and Best[2] doubt whether normal spleens ever rupture spontaneously. Typhoid fever, malaria, acute infectious mononucleosis, leukemia, splenic neoplasms, and even torsion of the pedicle may cause spontaneous rupture.

Thirty-two cases of splenic rupture during the treatment of neurosyphilis have been reported[8]; of these, recovery following splenectomy occurred in only one case.[15] It has been suggested that rupture occurs more readily in luetics because the splenic capsule loses its elasticity and becomes adherent to the diaphragm, hence the distension associated with malaria causes it to tear.[3]

It is well known that the spleen very seldom ruptures spontaneously in naturally acquired malaria, although it is susceptible to tearing by slight or moderate trauma. Russ and Gaynor reported the case of a soldier who had malaria while stationed in India, and suffered a splenic rupture when the malaria recurred while he was home on furlough.[14] This case survived following treatment by splenectomy.

McCarthy and Knoepp have reported two instances of spontaneous rupture in which recovery followed splenectomy.[11] These cases also were in soldiers. In one it was due to acute infectious mononucleosis, and in the other to an hemangioma of the spleen. It seems that most of the recoveries are in military cases; perhaps this is due to the more vigorous physical condition of the soldier patients.

Cases where this catastrophe is a complication of bacterial endocarditis, as our case today was, are exceedingly rare. Kerkhof and Giere reported such a case in 1933[9] from this hospital. In that case there was no hemorrhage into the peritoneal cavity, but a septic infarct of the spleen ruptured into the abdominal cavity giving rise to a fatal peritonitis due to streptococcus viridans. At the time of their report, Kerkhof and Giere were able to find only one other report of ruptured splenic infarct in subacute bacterial endocarditis.[10] Recently another case very similar to ours was reported in the case records of the Massachusetts General Hospital.[4]

It is sometimes hard to distinguish between traumatic and spontaneous rupture of the spleen, for bending over, a minor fall, coughing, a malarial paroxysm, a playful blow on the abdomen, or tossing and turning in bed may be enough to cause tearing of the capsule of a distended, soft, and friable organ. Pain is experienced in the left upper quadrant, and there may be pain in the left shoulder. Pronounced weakness and perhaps fainting accompanies an active hemorrhage. The blood pressure is usually low when the patient is first examined, and successive readings reveal a downward trend of the blood pressure. There is usually rigidity, tenderness, and rebound tenderness of the left upper quadrant. The white blood count becomes elevated quite soon. Hemoglobin values and red blood counts go down if the bleeding continues and determinations are made over a period of many hours.

If a peritoneal tap is made with a needle, blood may be drawn back, which confirms the diagnosis of intraperitoneal hemorrhage. But failure to encounter blood does not rule out the presence of hemorrhage, for the blood may be walled off by loops of bowel or folds of omentum.

Ballance's sign may be present.[1] It consists in an enlargement of the area of percussible splenic dullness. A flat x-ray plate of the abdomen may reveal an area of increased density in the left upper quadrant, surrounding the spleen, or the shadow of the spleen may be indistinct and the stomach dilated with serration of the greater curvature.[12]

Rupture of the spleen is an urgent surgical emergency. Liberal transfusions with blood and plasma must be given if the patient is in shock, and blood must be available even if the patient's condition appears good. The blood pressure should be raised to normal or near normal levels before operation, if that can be done without losing too much time. In some cases, however, the only thing which can stay the downward trend in the blood pressure is to open the abdomen as expeditiously as possible and clamp off the splenic pedicle.

It should be remembered that all cases of splenic rupture do not occur immediately after trauma. In one out of seven cases the syndrome of delayed splenic rupture occurs.[17] Here the pulp is torn and an encapsulated hemorrhage is formed under the capsule. Several days or even weeks later the capsule may give way, perhaps due to pressure necrosis and a severe secondary hemorrhage occurs.[5]

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from July Issue)

Under the General Statutes of 1866 of Minnesota the township supervisors, among whom was an occasional physician, for six years comprised the local boards of health. When, in 1866, Dr. Charles N. Hewitt, of Red Wing, whose hobby during his service in the Civil War had been sanitation of army camps, brought to civilian life in Minnesota the conviction that the prevention of disease by physicians should be as important as the cure, he began the one-man campaign that resulted, in 1872, in the creation of a state board of health with comprehensive but merely advisory powers, extending into counties and townships. The next year the powers of the board were strengthened by requiring each township to elect a town board of health of not less than three members, one of whom was to be a physician. In 1873 specific response was made in Fillmore County to this special law, a physician serving in every township and in nearly every village, and by 1880 the local rules were increasingly stringent, as to the state of cellars, outbuilding, stables, cowyards and sties; the boards of health asserted their right of entry for inspection and the right to issue orders for cleaning up by a set time (usually an annual event and in May); the fine for violation was from $3.00 to $20.00 and lock-up or Fillmore County jail until the fine was paid. And when, after provision for recording of vital statistics had been made, announcements appeared that town clerks would enforce the registration of births and deaths; the penalty for failure to file was $20.00.

It was in the early period of attempted education of the public that one hard-working health officer in southern Minnesota lamented "the pure innate hellishness" of a certain class of people, found everywhere but particularly in small towns, he said, a class who could not conceive of a medical man being interested in the well-being of his neighbors to the detriment of his own pocket. After ten years of gradual improvement, "the state of the public mind," wrote Folwell, "seemed to warrant the use of public authority in curbing contagious disease and maintaining public health." The teeth of the new act of 1883 were in the section that made violations of the law and of the regulations of the state or local board of health misdemeanors punishable by fine or imprisonment or both. It was in this early period also in Minnesota that the county physician in accepting office engaged for a nominal salary of considerably less than a dollar a day to travel over the entire county to those needy patients who might require his services, to administer to the sick and to furnish medicine.

By and through the nineties, reports of village boards of health were evidence of close attention to matters of public health, notably in the schools in guarding against spread of communicable diseases. There were frequent statements that pupils had been sent home and that certain rooms or whole schools had been closed for specified periods.

Smallpox in Fillmore County.—As noted previously, there were in the county in the first decade after its organization scattered cases of smallpox, in some of which death occurred. Thus early, and long thereafter, the better physicians advocated vaccination against the disease and through the public press announced themselves, as has been noted, as possessors of reliable vaccine virus for prevention, available to all who wished for protection. But even in 1873, when smallpox was a recognized and serious menace in all parts of the county and when the State Board of Health had been established and had manifested its attitude toward the prevention of disease the effect of these notices of the physicians was reduced by well-meant but uninformed editorial additions (although at times in the same papers the value of vaccination had been stressed by the publishers) in which the public was assured that cleanliness and wholesome food were efficient preventives of the spread of the epidemic.

It was not until the epidemic of 1882 that statements concerning smallpox in Fillmore County appeared in the annual reports of the State Board of Health, and then came a detailed story of two cases of the disease in Lanesboro from Dr. J. C. Hvoslef, the local health officer. A family of emigrants from Norway had come on an infected ship fourteen days from Liverpool, reaching Philadelphia on March 29, and they had arrived in Lanesboro on April 1. The twelfth day after leaving the ship two of the group came down with confluent smallpox. Dr. Hvoslef quarantined the house, used disinfectants constantly, was the only person seeing the sick, and after each visit he changed his clothing and washed and disinfected himself. Because it was impossible to find any attendant for the patients or help for the quarantined family, Dr. Hvoslef himself carried food, water and medicine to them all during the entire period of quarantine; his task was made no easier by constant complaints from the townspeople that the sick should be removed to a less thickly settled part of the village. One point of difference only rose between the state board and the local health officer. When instructed to vaccinate immediately all members of the affected family, Dr. Hvoslef instead followed the advice of his collegiate teacher of medicine, Professor Niemeyer, who had taught that persons already infected with smallpox should not be vaccinated. The secretary (Hewitt) of the state board replied to Dr. Hvoslef's report of the course he had followed. "Am sorry to take issue with Niemeyer, but repeatedly during the last six months we have vaccinated families such as your cases were in, and the vaccine has either prevented the variola altogether, or converted it into varioloid. I am utterly at a loss to know how you are to judge that this or that person is, at any given time, 'infected.' But vaccination enables you to *know* whether they are protected which is our problem in such cases." By May 25 the family was discharged from quarantine; there was no further outbreak of smallpox in the community.

In subsequent years, prior to 1900, although no doubt there were occasional cases of smallpox in Fillmore County, further accounts did not appear in the records of the State Board of Health.

Diphtheria in Fillmore County.—From the earliest years diphtheria appeared from time to time in the county and with increasing settlement of the region came increasing incidence of the disease. In the local newspapers in the late fifties and in the sixties appeared comments of which the following, in 1862, is typical (this is the official *Fillmore County Republican,* of Preston): "The diphtheria: This somewhat new and dangerous throat disease has made quite a havoc among the children in the village. Some half a dozen have already fell (sic) victims to this almost fatal disease." In this period also appeared gratuitous advice, source unspecified, as to medical treatment for the disease: chiefly iodene diluted with whiskey, and one tablespoon of whiskey taken every hour. In 1864 there was an outbreak of virulent diphtheria in southwestern and western Fillmore County and, by extension, in eastern Mower County, and in the seventies, eighties and nineties came other sporadic outbreaks and even epidemics, which the local physicians labored to control. Greatest effort of all boards of health in the next decades was directed toward the prevention of diphtheria and other communicable diseases, and the accomplishment was difficult because of the survival of the ancient pious belief that illnesses were divine punishments for sin and warnings against misdemeanors. Even into the eighties it was impossible to convince the people, in Fillmore County and adjoining counties, as elsewhere, of the extreme contagiousness of diphtheria. One clergyman held public funerals of the victims of the disease which he exhorted all children and adult persons to attend; the coffins were opened wide that all might "contemplate the wisdom of their divine creator." All looked, many of whom within a few days were dead from diphtheria.

In the records of the State Board of Health the first accounts of diphtheria in Fillmore County appeared in annual reports of 1878 (published in 1879), succinct and informative statements dealing with various aspects of the disease, submitted by Dr. R. L. Moore of Spring Valley and Dr. T. H. Everts of Rushford, two of the thirty-five physicians in the state who had responded among the fifty-three who had been circularized.

Dr. Moore, on the west central edge of the county, first stated: "Sporadic cases of diphtheria are occurring at the present time. I think not a year passes in which we do not see some cases. One epidemic of 1877 was from January 10 to November 1. There were in the township twenty deaths from diphtheria in about 240 cases . . . It is a remarkable fact that not a Norwegian had diphtheria." His summary was: "In no disease is there greater need of courage and vigilance. Strike earnest, vigorous and rapid blows. Don't give a little dose of chlorate of potash or of sulpho-carbolate of soda every three hours and then when your patient dies between the second and third dose, ascribe it all to Providence and the malignancy of the disease. Remember you are in the face of a disease of moments rather than of hours and days. Give your patients your best remedies every half hour and for eighteen hours out of the twenty-four. Don't give any opium. Spray and gargle the throat, but don't use the swab nor forcibly detach the membrane. For gargling or spraying, pretty strong solutions of chloral hydrate stand at the head."

Dr. Everts, in the northeastern corner of the county, gave a detailed and thoughtful comment, from which a few lines appear here. Reporting for himself and his local confreres, as did Dr. Moore, he stated that in the autumn of 1862 there had been in the vicinity of Rushford a few malignant cases of diphtheria but that since observations of the disease by local physicians had been confined to a comparatively few cases, all but two of which had occurred in a single locale and severe epidemic in the winter of 1876 and 1877. Half of the patients, whose disease clearly was diagnosed as diphtheria, died; those who had "simple sore throat" recovered. Concurrently there had been many cases of scarlet fever. Dr. Everts continued: "The inference from observation is irresistible, that some general cause is operative in the production of sore throats with fever . . . Cases presenting contagious membranous exudation (not merely apthous spots, however large) upon the mucous surface, and developing grave symptoms of systemic poisoning—which such cases always do—we diagnose diphtheria; other cases, not." And, "fifty per cent of cases of true diphtheria have proved fatal. Blood poisoning has seemed to be the chief element in all, and in several a sole cause of death. The principal sequela observed has been the paralysis of the optic and glosso-pharyngeal nerve." The disease had prevailed in a mild open winter; conditions of soil evidently were not concerned in its production. Cases occurred in the valley on dry, sandy soil and on ridges elevated and perfectly drained, in homes of low social conditions and filthy surroundings and in the homes of the best class of residents, in surroundings in every way unexceptional.

From Chatfield, on the north central border of the county, over a period of years in the late seventies came many reports of cases, unsigned, but known to have been submitted by Drs. A. H. Trow, M. A. Trow, and R. W. Twitchell. In one report was propounded the theory that the damp decaying foundation timbers in a home in which diphtheria had struck were responsible. "Such a home in Memphis would help to propagate yellow fever; why not diphtheria in Minnesota?" And there were reported, concerning causes other than contagious, "decaying strawstacks near dwellings; wells into which surface drainage is allowed to run; old log houses and exceedingly filthy cellars."

From Lenora, in southeastern Fillmore County, came reports of cases of malignant diphtheria in 1877 and in the following two years. Here the homes afflicted with the disease were on dry, high ground; the water was from wells and cisterns.

The physicians of Fillmore County who replied to circulars and furnished most of the data for the official report for the period from November 1, 1879, to November 1, 1880, inclusive, were R. L. Moore and A. F. Whitman, Spring Valley; H. C. Grover, Rushford; L. Redmon and T. E. Hall, Preston; A. H. Trow, M. A. Trow and R. W. Twitchell, Chatfield; A Plummer, Hamilton; J. M. Wheat, Lenora, and D. J. Lathrop, Granger, the latter a village centrally placed at the southern border of the county.

Although Dr. J. W. Magelssen, of Rushford, was not one who gave an official report on diphtheria, he was engaged in the care of sufferers from the disease. His description, in his memoirs, of the epidemic of 1881 and 1882 is graphic and recalls the name "bladders in the throat," that was given to diphtheria during the plagues of the seventh century. He speaks here for himself and for all his fellow physicians in that time of stress in Fillmore County:

> In the winter of 1881 and 1882 the country was swept by a perfect scourge of diphtheria, of the most malignant type. It was like the plagues and pestilences of which one reads in the old days; like the black plague of London, described by DeFoe.
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> Often the people stricken in the morning were dead at night. Their throats were literally rotten; the stench was so awful that it was noticeable outside the houses of the afflicted ones. Those that watched over the sick could not leave them for a minute. When the throat was swabbed out clean it was only a few minutes before the mouth would be filled with a horrible slime that choked the patient. Whole families died within a few days of each other. The strange thing was that as many recovered as did. Some cases were so awful that by the second or third day great abscesses formed in the throat and burst, leaving holes big enough to put a finger in. I saw several where there were such holes, one on each side of the throat, so that a man could have put his finger through the throat from side to side. Yet even some of these lived.
>
> I was a widower at that time. My two maids, kind, capable girls, both died of the pestilence. Every one had troubles of his own and no one would come and help me. My hired man, Carl Ronningen, did all the work that was done. He had been an Army officer's body-servant for years and could do a little of everything. He cooked the meals, and washed

> and tended my sick children when I was gone on my endless rounds. I wasn't in bed for weeks . . . The epidemic went on and on. I got so tired at last that I would go to sleep if I stopped moving, wherever I might be. I even went to sleep standing on the stair, where I had stopped to listen to one of the children.

In the following years the type of reports submitted to the State Board of Health gradually changed; there was less descriptive comment than formerly and more summarization. In 1886 only one case of diphtheria was reported in Fillmore County, by Dr. J. R. De Cousens, health officer at Lanesboro. In succeeding years there were a few apparently sporadic cases; in 1896 there were thirty cases, in 1897, twenty-two, and in 1898, twenty-eight; in each year the death rate was high. By 1899 there was a sharp decrease in mortality and effort was being made successfully to reduce it further and to curb the disease.

Extension of Work in Public Health and Sanitation.—Throughout the eighties improvement and extension in the work of public health continued through local boards in every township, village and city in the state. It is notable that township boards under the new laws of 1885 had become the agents of successful local control of infectious disease both of human beings and of domestic animals, and that improvement was evident in the organization and functioning of village boards of health. Each village board had an executive officer, the health officer, who was, as required by law, a physician. Few of these men were paid. Their duties were so important and various as to require special knowledge and training. They of necessity were men of medical training and they increasingly were acquiring knowledge of the practice and principles of public health. It was now that public sanitation was stressed. In Fillmore County in the reports of J. W. Magelssen, of Rushford; J. C. Dickson, of Chatfield; R. L. Moore, of Spring Valley; J. R. De Cousens, of Lanesboro; G. A. Love, of Preston, and others, annual clean-ups were emphasized.

By the late nineties water surveys were being made, and from towns throughout the county, in the report of 1899-1900 of the state board of health, were statements from local physicians about analyses of potable and nonpotable water. In a report from western Fillmore County came two special and interesting comments relative to local geological formations in relation to public health. The first comment was with regard to the site and the wells of Spring Valley:

> The town is built on the sides of an ancient gorge cut by the Spring Valley Creek. The edges of the rock strata, as exposed to the water cutting, have been so acted on by frost, air, etc. as to exhibit innumerable crevices, apparently extending far into the heart of the stratification. In several places where cellars were being dug and where other cuts had been made, these crevices were in evidence, consequently, the natural drainage would carry the effluent of the numberless cesspools and vaults in all directions from the source of pollution to the neighboring wells . . . One citizen was using an old artesian well as a cesspool and probably contaminating many of the town wells. It is surprising that there is any good water in the village.

The unhealthful conditions met prompt correction. The second comment concerned the "sink holes" referred to in the opening section of this paper:

> In the limestone areas of this county are numerous depressions, known as "sink holes." These were formed by breaking through of the drift where it was spread over some preglacial rock canyon. In some places these sink holes are numerous, and often extend to great depths. In past time wounded wild animals have been known to creep into them to die, and at the present time they are (and had been for nearly fifty years) a great convenience to far-sighted rural inhabitants, who find them excellent burial cavities for domestic animals, regardless as to whether death has been due to accident, old age, or disease. These are

also very convenient natural cesspools which never fill up. Such conditions alone might account for endless pollution of water.

By 1899 the State Board of Health of Minnesota, working with local township and village boards, was (1) giving aid in the diagnosis of certain infectious diseases, (2) in clearing up of doubtful diagnosis, and (3) in the investigation of obscure diseases. In all of these points the work related to infectious diseases of both men and animals. Not until 1901 was a law passed in the state providing for county boards of health, and that law was permissive only. In the revised laws of 1905 county boards of health became mandatory.

Conditions of Medical Practice at the Close of the Nineteenth Century

In his presidential address before the Minnesota State Medical Society, in 1890, Dr. J. H. Dunn gave an able and fascinating review of the growth of medicine in the nineteenth century, particularly in the last quarter of that century, making graphically clear the advances, now too well known to require enumeration here, in the science and art of medicine and surgery, in medical education, medical literature, medical organization and medical legislation for the protection of the medical profession and the public, especially that legislation brought about by the physicians of Minnesota acting as a body in the medical society of the state of which the county medical societies were component parts.

One further comment on laws of licensure, as related to practitioners of Fillmore County, is made here. As noted earlier, after the attempt at regulation of medical practice by legislation, in 1869, fostered by the Minnesota State Medical Society, fourteen years elapsed before further comparable effort to procure legislative enactment was made by the organization. On March 15, 1883, as the result of faithful work, there was passed "An act to regulate the practice of medicine in the state of Minnesota and to license physicians and surgeons, and to punish persons violating the provisions of this act." On February 28, 1887, this law was repealed and a new and more stringent act came into effect and, by its provision, a new State Board of Medical Examiners came into office. Under this law there were six classes of licensed physicians in the state: Those physicians licensed by the former board on presentation of a diploma from a recognized medical college; those licensed by the former board after examination in lieu of a diploma; those granted certificates of exemption by the former board by reason of practice in the state five years prior to the passage of the act of 1883; those licensed by the present board after examination under the act of 1887; those who were known to have practiced before the law of 1887 went into effect, but who had not complied with the provisions of the act of 1883; and those who had filed with the secretary affidavits that they were in practice prior to the law of 1887. In Fillmore County there were representatives of all these classes who subscribed to the new rulings, as did the physicians of the county to subsequent legislations, in 1895 and later.

In Fillmore County, from the earliest fifties of the nineteenth century to the turn of the twentieth century, there were, as nearly as can be determined, and as listed earlier in a roster, resident from a few months to many years and of all types and schools, about 135 physicians as has been suggested, there probably were many others, of whom no record remains. In the period from 1853 to 1883, inclusive, there were at least sixty-four physicians, and probably more, of whom no mention appears in the official registers of physicians licensed in the state, beginning in 1883; some of these earlier men were substantial and permanent citizens, others were of the itinerant or semi-itinerant type. There were thirty-four physicians who were licensed, in one classification or another, under the "Diploma Act" of 1883 and nine who received exemption certificates under that law. There were twelve licensed duly under the improved law of 1887 and three who received exemption certificates. Between 1895 and 1900 fifteen more were licensed within the county. As stated in the section, "Physicians in Fillmore County," in this paper, in the eighties and nineties various medical practitioners from adjacent and other counties in Minnesota and from Iowa and Wisconsin were licensed to practice in Fillmore County.

Biographical Sketches*

Dr. John Brown, Scottish physician, once said, "It is the lot of the successful medical practitioner to be invaluable when alive, and to be forgotten soon after he is dead, and this is not altogether or chiefly from any special ingratitude or injustice on the part of mankind but from the very nature of the case."

About a few of the physicians who are mentioned in the succeeding pages little besides their names has been learned; about others a wealth of detail has been available. All of these early practitioners had countless experiences in common, in conditions of practice and types of patients and in surroundings and natural hazards. When a relatively full story has been presented here, it has been with the thought that it applies not to the subject alone but to some extent to all of his fellow physicians of the same period and type. Perhaps too generous use has been made of excerpts from old newspapers; it has been done to make evident the editorial manners and customs of the time and to show the relation of the physician to the public. Around some of the men who were identified closely with a village or a community is woven something of the story of the settlement.

"Why not idealize the doctor some?" asked James Whitcomb Riley in his poem, "The Doctor." Whether or not we here idealize the doctor, there is in the life of every physician, as of every person, the making of a book, and about these men of Fillmore County of the nineteenth century, as about all early practitioners of medicine, many volumes could be written. These physicians, as their stories have taken form, have seemed once more to move among the scenes they knew so well. On drives through Fillmore County among those scenes, which cannot have changed greatly since their times, it has been pleasant to picture the early doctors, sometimes making their rounds on foot, often riding on horseback with their saddlebags, most commonly riding in horsedrawn vehicles, carts, sulkies, buckboards or buggies, over the prairies, up and down the hills and along the winding valleys, intent on promotion of the welfare of their communities and on the immediate care of the sick; to see in the phantom villages the thriving and hopeful little settlements that they once were, and to visualize as they were in their beginnings the prospering modern towns. If the reader will bring sympa-

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*As stated in *Notes on the history of medicine in Houston County prior to 1900* (Guthrey), Mrs. George (Elizabeth West) Edward, of Canton, did preliminary field work for the Olmsted-Houston-Fillmore-Dodge County Medical Society in gathering biographical data about pioneer physicians who were long resident in Houston and Fillmore counties.

The writer has had the benefit of Mrs. Edward's biographical notes, and in addition has obtained essential background material and numerous additions to the medical roster of Fillmore County from two major sources: (1) official transactions and reports of medical organizations, medical journals, registers, directories, pertinent county records, histories and files of newspapers, old and more recent, and (2) correspondence with veteran physicians and with relatives, whenever discoverable, of early physicians now deceased; the biographical sketches, whenever reference has been possible, have been submitted and resubmitted for correction and approval.

Grateful acknowledgment is made to all of the many persons: relatives of the early physicians, officials, practicing physicians, professional workers and lay citizens, in Fillmore County and elsewhere, who have been encouraging and helpful in obtaining authentic material. A special word of thanks is expressed to Mrs. Edward; to Miss Margaret Snyder, sometime of Chatfield, who is engaged in writing a history of Chatfield, for supplementary notes; and to Mr. J. F. Meighen, of Preston, for the privilege of scanning many bound copies, long in the possession of the Meighen family, of early issues of the *Preston Republican* and the *National Republican*.

A Bibliography will appear at the close of this article.

thetic interest, perhaps he will be able to discern in these little sketches, some of them mere notes, the living stories.

Nelson W. Allen, a native of New York State, arrived in Winona, Minnesota as a practicing physician in the fall of 1853 and, according to the late Dr. D. B. Pritchard, of Winona, was the first man to practice medicine in Winona County. He remained in that county only a short time. By the spring of 1854, one of the first physicians to settle in Fillmore County, he had identified himself with the village of Chatfield.

The Allen and the Willis families of Chatfield came to Minnesota at about the same time from Kenosha, Wisconsin. Dr. Allen's sister Harriet was the wife of Grover W. Willis, prominent citizen of southern Minnesota, who donated the land now used as the Chatfield city park. Later, Grover Willis and his family moved to Winona, where they remained, entering into the civic and educational life of the town.

Mrs. Nelson (Jane) Allen is recalled by one of her grandsons as an aristocratic woman, refined and well educated, and it may be assumed that her husband was of comparable native ability, tastes and educational advantage. Dr. and Mrs. Allen had five children, Charles became a druggist in Chicago. Mason, who enlisted in the Indian Wars in Minnesota in 1862, was a carpenter in Chatfield until 1900, when he moved with his family to Brookings, South Dakota. Mary became the wife of William Briley, a general merchant in Chatfield for many years. In later years Mr. and Mrs. Briley made their home in Dell Rapids, South Dakota. Jennie was the wife of Frank Mathews, a commission merchant in Chicago, and Minerva was married to Eugene Morrison, an official of the Chicago, Burlington and Quincy Railway Company, in Chicago.

Dr. Allen carried on an extensive medical practice in the best professional traditions of the times and was active at least through 1872, judging from entries in business directories of the period. He apparently did not use the newspapers to inform the public in detail as to his professional attainments, as was done by many medical practitioners of the day; only the name, "N. Allen, Winona Street," appeared in the listing of local physicians in the earliest issues of the *Chatfield Republican* and the *Chatfield Democrat* in 1856 and occasionally in issues of later years. There is record that in 1857 and 1858 and again in the period from 1864 to 1865, inclusive, he was a trustee on the village school board.

Born in New York State in January, 1810, Nelson W. Allen died in Chatfield on June 8, 1876, aged sixty-six years and six months. After his death Mrs. Allen made her home with her daughter, Mrs. Morrison, in Chicago.

————**Atkinson**, of Chatfield—whether his field of work was medicine, dentistry, veterinary science or the church, has not been learned—in the late summer of 1882 was killed in the course of a hunting trip in Eyota Township, Olmsted County. He was riding in a wagon when his gun fell and discharged accidentally, shooting him through the right lung.

Peter Halstensen Bakke was graduated from the College of Medicine and Surgery of the University of Minnesota in 1891 and on July 10 of that year received certificate No. 175 to practice medicine in the state. Little information has been available concerning his life and work. According to directories of physicians he was in Lanesboro, Fillmore County, in 1893; by 1895 he had transferred to Preston, about ten miles distant, and there he remained presumably through 1898. In subsequent volumes, through 1909, his name was included, "Address unknown."

(To be continued in the September issue)

President's Letter

SURVEY TO DETERMINE WHETHER U.S. CHILD CARE IS DEFICIENT

SOME proponents of national compulsory health insurance, the Wagner-Murray-Dingell Bill, and some of those favoring perpetuation of the EMIC program, the Pepper Bill, refer to the 4,217,000 selective service rejectees as evidence of the deficiency of American medicine. This criticism is made despite the fact that of this total, 701,700 were rejected for mental disease, 582,100 for mental deficiencies, 444,800 were deaf, blind, legless or armless, 320,000 were rejected for musculo-skeletal defects, 280,000 for syphilis, 220,000 for hernia and 160,000 for "eyes," leaving only 1,500,000, or one-third of the total rejected for causes possibly attributable to inadequate medical care. Also, this criticism is made despite the fact that the rejections in Great Britain, which has had national health insurance for thirty-five years, were 59 per cent of those examined over a ten-year period instead of the 30 per cent found in the United States.

Yet the question remains, "Is the medical care of children and adolescents in the United States deficient?" One still ponders whether preventive or curative measures could reduce even this remaining one-third of rejections. There still exists the problem of both quality and quantity of medical care for this segment of the population, children and young adults. Accurate answers can only be provided by an accurate analysis and determination of the quality, quantity and distribution of pediatric care in this country. And from such factual information effective planning of the future course is possible.

One response of the profession itself to these problems has been the initiation of a survey of child health services throughout the United States by the American Academy of Pediatrics. The National Foundation for Infantile Paralysis has made a material financial contribution, and both the United States Public Health Service and Children's Bureau are collaborating by the assignment of personnel for the collection and analysis of statistical data. But, the study is being conducted under the complete control of physicians, and the sponsoring agency, the American Academy of Pediatrics, has registered its opposition to the Pepper Bill, and to the use of government funds for medical care of those able to provide care for themselves.

Under four subdivisions, the study will involve: (1) Hospital Facilities, such as general, pediatric, maternity, convalescent and tuberculosis hospitals, (2) Community Health Services, both public and private, in order to evaluate the extent and quality of general health services such as child health conferences, school health service, child guidance clinics, immunization programs and public health service, (3) Distribution, Qualifications and Activities of Professional Personnel, including data pertaining to the availability of physicians and procedures essential to complete medical care available from general practitioners, pediatricians and other specialists who care for children, and (4) Pediatric Education, as it is related to the whole broad problem in the quality and quantity of pediatric training in the sixty-six medical schools of the country. At the conclusion of the study, a report will be prepared which will be available to anyone who cares to use it. This collection of factual information will be used by the Academy of Pediatrics as a basis upon which sound recommendations for medical care programs can be made.

Here in Minnesota, the survey has the endorsement of the Council and the House of Delegates of the State Medical Association. It is to be conducted under the auspices of the American Academy of Pediatrics with Dr. Roland E. Nutting of Duluth serving as the State Chairman. An office has been established in the Division of Child Hygiene of the Minnesota State Board of Health and Dr. Viktor O. Wilson, Director of that Division, is to take an active part in the conduct of the study.

It is urgently requested that every physician fully co-operate, if and as requested, in supplying the information necessary for the successful completion of this survey. As has been said in some of the correspondence, unless physicians undertake the task, others less well qualified will, as is indicated by various bills now before Congress.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

DANGERS IN FEDERAL EXTRAVAGANCE

HEARINGS on the Wagner-Murray-Dingell compulsory health insurance bill have come to an end. The predominating number of those who testified favored the bill.

Nothing concrete about the cost of such a bill has been stated in the last bill under this title. A former bill submitted by the same Representatives stipulated 4 per cent tax on wages to be matched by the employer and a 5 per cent tax on income of those not on a salary basis. It was admitted by the opponents of the former bill that this would not be sufficient and that general tax funds would have to be called upon to make up the difference. An estimate has been made that this last Wagner-Murray-Dingell Bill would cost 4.5 billion dollars yearly. If cash benefits for wage loss are added (and this is most sure to follow) another 1.5 billion dollars will have to be added yearly to the tax payers' load. A large portion of this enormous cost would be spent in maintaining a governmental bureau involving some 120 million of the 140 million population of the country.

As has been the experience in all other countries which have embarked on this type of medical care, benefits and costs have increased with time, and there is every reason to believe from our own experience with governmental bureaus and political pressure that the same would occur with us.

It should be remembered, too, that the indigent would not be covered but would have to be provided for by additional taxation, as at present.

Human nature being what it is, individuals being able to get something for nothing (taxes being forgotten), needless demands on the medical profession would enormously swell the volume of practice. If free choice of physician should be allowed, the demands on the services of some physicians could not be met. If, on the other hand, physicians were designated, many would be dissatisfied and not avail themselves of their rights.

Compulsory medical insurance administered by the government resolves itself into the larger question as to whether private industry is to survive or whether the government in these United States is going to provide more and more for the needs of its citizens through high and still higher taxation. Increased taxation means less capital for new and expanding industry. This, in turn, results in a reduction in funds collected through taxation, and a vicious circle is established. The eventual result must be a communistic state with the government taking over all industry. Do we have to wait for more yearly deficits and a further mounting national debt before our legislators realize the danger? It would seem so.

In the meantime, Congress goes merrily along appropriating additional millions and billions and even seriously considering such legislation as the Wagner-Murray-Dingell Bill, the Pepper Maternal and Child Welfare Bill, an appropriation of $3,000,000 for a fertilizer plant to be built and operated by the government at Mobile, Alabama, et cetera.

The medical profession is not entirely obstructionist, as is claimed, to federal subsidy for certain health measures contained in the Wagner-Murray-Dingell Bill. It favors federal assistance in expanding the field of Public Health, the medical care of the indigent and adequate support of scientific research. It favors an extended program of disease prevention on national, state, and local levels. It also favors federal assistance to the states to enable each state to provide and maintain services and facilities for promoting the physical and mental health of mothers and children when the need can be shown.

The profession also favors the principle of prepayment medical insurance to relieve the burden of certain illnesses. It is emphatic, however, in its belief that this should be voluntary in character. The marked growth in hospital insurance argues that medical insurance should prove just as popular. In fact, medical insurance already established by state and local medical societies is rapidly expanding. Already thirty-one states have prepayment medical plans in operation or about to go into operation. The profession believes this is the American way of meeting the problem.

New Zealand is an example of how high wages, short business hours and liberal holidays, maternity and family benefits, free education, free health services and old age pensions serve to create and maintain such high taxes that industry is throttled. Taxes in Canada and England are probably higher than in our country, and political movements in these countries do not indicate a downward trend in taxation. Unless Congress and the people of the United States realize the throttling effect of high taxes on private industry and the necessity of reducing federal appropriations our national economy is headed for socialism and even communism. The American people do not want either.

STREPTOMYCIN

STREPTOMYCIN, the more recently discovered antibiotic, promises to become a valuable addition to the antibiotic penicillin.

Streptomycin was first isolated by Waksman in 1944 from Streptomyces griseus, a strain of Actinomyces. It was Waksman who had isolated streptothrycin in 1944 from Streptomyces lavendulae, another group entity of Actinomyces. It seems that the Actinomyces are not a true mold but have characteristics similar to molds and bacteria. Streptomycin proved to be of more therapeutic value than streptothrycin.

It has been known for some time that earth must contain antibacterial substances. Otherwise it would be overrun with a great variety of bacteria. It is now known that earth contains antibacterial substances, some harmful but some such as that contained in certain Actinomyces not harmful to body cells.

Streptomycin has been found to be bactericidal to certain gram-negative organisms not affected by penicillin. It has saved the lives of individuals with Escherichia coli, Aerobacter aerogenes, Salmonella bacteremia, tularemia and Klebsiella pneumoniae meningitis. Its value in typhoid fever, brucellosis, tuberculosis and leprosy has not yet been proved. It seems promising in urinary tract infections from gram-negative organisms, in influenza meningitis and in pertussis. As it is also effective against certain gram-positive organisms, it may prove more effective in certain mixed infections than penicillin.

While streptomycin is administered much the same as penicillin, intramuscularly, intravenously, orally and intrathecally, there are certain therapeutic differences. The unit of dosage of streptomycin is one microgram, the drug is more slowly absorbed and more slowly excreted and is inclined to be more toxic. Some toxic action with fall in blood pressure has been reported following intravenous administration. More serious toxic effects have been on the vestibular portion of the eighth cranial nerve causing deafness, dizziness and tinnitus. These results, however, have followed large and prolonged dosage and have cleared in time.

Streptomycin is not yet on the market. All production is allocated to the Army, Navy, U.S.P.H.S., Veterans Administration, and to the Committee on Chemotherapeutics and Other Agents of the National Research Council. This committee has charge of the chemical evaluation of streptomycin, not only in large scale organized studies but by individual physicians in emergency cases. Evaluation of streptomycin is to be made before it will be available to the profession at large. Requests, however, for its use in certain cases may be made to Dr. Chester S. Keefer, Evans Memorial Hospital, 65 East Newton Street, Boston, Massachusetts, chairman of the National Research Council Committee.

ANTHALLAN

CONSIDERABLE publicity has been given to the new drug anthallan in the treatment of hay fever and vasomotor rhinitis. Developed by the Research Division of the Medico Chemical Corporation of America, New York City, a report by Ghoselin* of its use in a selected group of forty-two individuals treated in the out patient department of the Columbia University Presbyterian Hospital Medical Center in New York has appeared. This is the only report which, to our knowledge, has appeared. No sooner was it published, than it was heralded in the lay press and over the radio as a new "cure" for hay fever.

Acceptance of a new remedy for general use by the profession should depend on more convincing proof in the form of more extensive trial. Anthallan may or may not be a great discovery. Fortunately, it is not generally available and should not be generally prescribed until confirmation of its value and lack of deleterious side effects have been made. Here, again, is another instance of the value of the newly constituted Therapeutic Trials Committee of the AMA, whose function is to evaluate new remedies for the information of the profession.

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* Ghoselin, A. D. J.: The treatment of seasonal and non-seasonal hyperesthetic rhinitis with anthallan. Bull. New York Acad. Med., 22:320, (June), 1946.

AN IDEAL TUBERCULOSIS CASE-FINDING PROGRAM

Report of Subcommittee of the Committee on Tuberculosis
Minnesota State Medical Association

Preface: In 1938 the Committee on Tuberculosis of the Minnesota State Medical Association seriously considered the development of a state-wide tuberculosis control program to be directed by the Medical Association. During numerous meetings all phases of tuberculosis work were discussed, and the committee members finally agreed unanimously upon certain procedures which could be recommended to the physicians of the state. These recommendations and other considerations were published in the October 1942 issue of MINNESOTA MEDICINE under the title, "The Tuberculosis Program of the Minnesota State Medical Association." Practically all of the information and recommendations contained in that report are still valid.

During the past few years, mass surveys have become popular throughout the nation and our Committee on Tuberculosis has had inquiries from physicians of several counties regarding the efficacy of the various methods employed in tuberculosis control. Thus, it seemed desirable for the Committee to prepare recommendations which might be made available to every physician. Therefore, in June, 1945, Dr. Ruth E. Boynton was asked to assume the chairmanship of a subcommittee to study the problem carefully and prepare the recommendations which would be of practical value to Minnesota physicians. Dr. Boynton accepted the chairmanship and Drs. S. S. Cohen, E. A. Meyerding and C. G. Sheppard were appointed as the other members of this subcommittee. Tuberculosis surveys in Minnesota were not new. Indeed, a vast store of information was available for the study of the subcommittee.

Although tuberculin testing surveys had been conducted among cattle in the 1890's, the first survey as such among humans was done by Lampson in 1912. Slater achieved wide fame through a survey reported in 1924. An outstanding contribution was made by Simons and Hilleboe in 1931. Harrington surveyed the entire personnel of the Minneapolis school system, as well as more than 25,000 children. Burns and Hilleboe carefully investigated the tuberculosis situation among personnel and patients of all state institutions for the mentally ill. Jordan had surveyed the population of the four counties which his sanatorium serves. Diehl and Boynton had conducted most careful surveys on approximately 50,000 University students since 1928. Danielson and Sheppard in co-operation with the other physicians of their medical societies had undertaken country-wide surveys. Over the past twenty years Meyerding had directed surveys on tens of thousands of individuals. Geer had made important observations, particularly among high school students and nurses. Hedberg and Davies had undertaken to survey the 200,000 citizens of St. Louis county. The Hennepin County Tuberculosis Association and the County Medical Society had conducted surveys among certain groups such as high school students. Nearly all of the sanatorium superintendents have done surveys in their respective districts for many years. If space permitted, a much longer list could be presented. Suffice it to say that every possible method of case finding and every known survey procedure had already been employed in Minnesota.

From an analysis of the available data in Minnesota and elsewhere, Dr. Boynton made the report for her committee in April 1946. This was approved by the Council and the House of Delegates of the Minnesota State Medical Association.

J. A. MYERS, M.D., Chairman
Committee on Tuberculosis

Subcommittee Report

This subcommittee was asked to study available data on procedures used in case-finding programs for tuberculosis and to make recommendations for procedures that might be carried out by the county and district medical societies.

The committee believes that it would be well first to outline what might be accepted as an *ideal* case-finding procedure, then present several less complete types of programs which have been used, pointing out the advantages and disadvantages of each.

It is our opinion that each medical society should plan its own program according to the local situation. What information this committee may give to the local societies will act simply as a guide and not as a specific plan to be used on a state-wide basis.

General statement: The two general types of tuberculosis case-finding programs now in use are (1) the use of the tuberculin test, followed by a chest x-ray of those who react to the tuberculin, and (2) the chest x-rays of all individuals in a group without previous tuberculin tests. Neither of these methods will permit a definite diagnosis of tuberculosis without further diagnostic procedures, such as the patient's history, a careful physical examination, an examination of the sputum and other laboratory aids.

RUTH E. BOYNTON, M.D., Chairman
SUMNER S. COHEN, M.D.
E. A. MEYERDING, M.D.
CHARLES SHEPPARD, M.D.

An Ideal Tuberculosis Case-Finding Program

1. Tuberculin test all persons in the community with at least the first test dose of P.P.D. or O.T., or the two-test dose of either P.P.D. or O.T.

2. X-ray all reactors to tuberculin. It is desirable to do a chest x-ray on all of the people in the community, regardless of the tuberculin reaction, not only to detect tuberculosis but because of the other pathologic conditions of the heart and lungs which may be found on a

routine chest x-ray. If it is not possible to x-ray all individuals, at least all reactors to tuberculin must have an x-ray of the chest.

3. Arrange for a follow-up study of all contacts of those who react to tuberculin to determine if possible the source of the tuberculous infection.

4. An annual chest x-ray of all over twelve years of age who react to the tuberculin test, or more frequently if indicated.

5. Repeat the tuberculin test on all non-reactors every one to three years if the local situation warrants.

6. Arrange for medical and sanatorium care for any active cases of tuberculosis found.

Recommended Procedures When Ideal Program Is Not Possible

If possible to carry out this ideal program in every part of Minnesota, tuberculosis could be eradicated in a relatively short time. Such an ideal program, however, is not practical for most communities because of the lack of sufficient doctors, the expense involved, and other factors. Much can be accomplished, however, by utilizing those parts of this ideal program that can be carried out with existing personnel and funds. Some of the methods that have been used and which may serve as a guide to other communities are suggested:

1. *Tuberculin test and chest x-ray of reactors.* In Meeker and McLeod Counties the medical societies have set up programs attempting to do a tuberculin test on all people in the community and arranging for the chest x-ray of reactors to be done in the physician's office. In both counties the tuberculin tests are also done in the doctors' offices.

Advantages: The patients come to the doctors' offices for the tests and x-rays. If any pathology is found, the physician has immediate and direct contact with the patient and can arrange for care.

Disadvantages:

(a) It is often difficult to motivate people to come to the physician's office when well for any routine procedure of this kind.

(b) Therefore, this type of survey is necessarily slow.

(c) It is time-consuming for the busy physician, and therefore interest may lag after a certain length of time.

In some counties the county medical society has arranged with the county nurse or other public health nurse to do the tuberculin testing, with the reactors coming to the physician's office for the chest x-ray.

Progress may be made with a less ambitious type of program in which only certain age groups are selected for the tuberculin test. Testing of certain school age children has been found to be of value. School children are easily available in groups for testing. If a program of testing school children is planned, those ages should be tested in which the tuberculin test will be of most value in finding active cases of tuberculosis. If all of the school children cannot be tested, probably grades one, eight, nine and twelve will be most productive of results.

X-rays should be taken of all reactors over the age of twelve. A home follow-up should be done, however, on all reactors of all ages. The chest x-ray is not advocated for first grade children because of the negligible number who will be found to have shadows. The home follow-up for these young children is, however, very important, as the examination of home contacts of the child who reacts to tuberculin will frequently uncover an unsuspected, active case of tuberculosis.

The x-rays may be done in the doctor's office, in a hospital, in a county sanatorium, if one is available, or by means of a mobile photofluorographic unit.

All of the reactors over twelve years of age should be re-rayed annually or more frequently if indicated. Children previously nonreactors should be retested every one to three years.

The *advantages* of this type of program are:

(a) It identifies the children who have become infected, as shown by a reaction to the tuberculin test, so that these children may be kept under observation.

(b) It permits further study and follow-up of contacts of these reactor children, thus leading to open cases of tuberculosis which might not be found otherwise.

Disadvantages:

(a) To give the tuberculin test is time-consuming.

(b) The test must be read forty-eight to seventy-two hours after it is given.

(c) There are always some people who object to having any test which requires the injection of foreign material.

2. *The use of a chest x-ray on all members of a community without previous tuberculin testing.* This has been done in some places, using the regular 14 by 17 film. More recently there has been developed the photoflurographic portable unit, using either a 35 or 70 millimeter film or a 4 by 5 film. With such a portable unit and an adequate staff, a large percentage of the population of a county can be x-rayed in a relatively short time. At present St. Louis and Hennepin Counties are the only places in Minnesota that have portable photofluorographic units in operation. The Minnesota Department of Health expects to have one or more of these units available in the near future. Ramsey County also will have two such units. When such x-ray surveys are done, a tuberculin test should follow the x-ray in every case in which any x-ray shadows are found.

Advantages:

(a) It is possible to obtain a chest x-ray on large numbers of the population in a relatively short time and at relatively little cost.

(b) If a large enough proportion of the population receives a chest x-ray, most of the active cases of tuberculosis will be discovered and immediately taken out of contact with the public.

(c) Non-tuberculosis pulmonary pathology, as well as cardiac pathology, will be found.

Disadvantages:

(a) Without the tuberculin test no knowledge is obtained as to whether the individual has been infected with tubercle bacilli and therefore needs closer observation than the person not infected.

(b) Without knowledge of the tuberculin reaction, shadows in the lungs may be misinterpreted.

(c) At the present time there are not enough portable units and personnel to man the units to make a state-wide program possible.

Minnesota State Medical Association
Committee on Tuberculosis
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REPORT OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

The convention held this year in San Francisco July 1-5, 1946, was like a revival of the old-timers of the American Medical Association. The scientific exhibits were not quite up to par because of the shortness of time between the end of the war and the exhibits. Particularly outstanding, however, were the exhibits of the Army and the Navy, especially that of the Army.

The meeting of the American Medical Association was not very colorful this year, but it did bring out certain things which apparently are quite fundamental and probably have been brewing for some time.

It is remembered that last year the trustees were ordered to hire a National Research Agency to make a complete analysis of the proceedings and the affairs, internal and otherwise, of the American Medical Association.

The Rich Institute was chosen for this purpose and the report is now in the hands of the trustees. It concerns, as far as we can determine, two main factors. One was the question of the reorganization of the internal affairs of the Association, and the other, dealt with the relations of the AMA with the public.

The first consideration of the report was to the effect that the internal affairs of the Association be divided into three parts. The first had to do with the editorial phase of its work. It was decided that Dr. Fishbein would confine his time to the editing of the *Journal* and its other publications. The second dealt with economics. An expert on economics is to be employed who will be expected to follow out recommendations made in the Rich report. The third question involved public relations. An expert, who shall be under the direct supervision of the general manager, Dr. Lull, secretary of the American Medical Association, is to be employed to correlate all the activities of the AMA.

All of the delegates appeared to be quite well pleased with these recommendations and their adoption. It is recalled that for some years the California delegation particularly has been critical of the pubic relations as directed by Dr. Fishbein. The action taken by the House this year will eliminate that criticism and everyone seemed to be well satisfied with the new setup.

With reference to medical economics, everyone seemed to concur in the opinion that the present legislation before Congress is not in proper form and all states should start setting up voluntary health insurance and thus get at the roots of the fundamental weakness existing at the present time. The general opinion seemed to be that the program of voluntary health insurance adopted by the states would be well received by Congress.

As far as resolutions are concerned, the session had nothing very revolutionary to offer except the routine business. The name of the Council on Medical Service and Public Relations will be changed dropping the words "Public Relations," as public relations will be operated under a separate department in the headquarters office as alluded to previously.

The County Society of San Francisco provided very interesting entertainment for the delegates when not occupied with business sessions.

The delegations from the coal mining regions of West Virginia, Pennsylvania and neighboring coal states were very much concerned over late developments in the settlement of the recent coal strikes. The large welfare fund to be paid by Mining Companies on a tonnage basis worried the doctors, since this may be just the beginning of socialized medicine in localized areas. A committee was appointed to investigate and keep close tab on the changes.

Attention is called to the National Bituminous Wage Agreement appearing on page 917 of the July 13 edition of the *AMA Journal,* which should be read by every person who is interested in social insurance, because of its vast implications in the possible trends of organized labor and medicine.

Dr. Ray Lyman Wilbur retired as chairman of the Council on Medical Education and Hospitals, a position which he has held since 1925 with the exception of one year when he was President of the American Medical Association. A very fine tribute was paid to him for the untiring efforts he has made in promoting medical education and the affairs of this committee.

It was voted at this meeting of the House of Delegates that two sessions of the House of Delegates should be held each year because the gap of one whole year between meetings is too long an interval when so many national medical problems are arising.

Another interesting item was the resolution passed urging the limitation of the constitution of the Health Organization of the United Nations to problems related only to preventive medicine, standardization of drugs and biologic preparations and the prevention of dissemination of disease between nations, the practice of medicine being entirely excluded from any of the activities of the health organizations of the United Nations.

In the election of officers, Dr. Olin West was named president-elect. There was a spirited contest in the election of the Speaker of the House, Dr. Roy W. Fouts of Omaha winning re-election.

The 1947 meeting of the American Medical Association, its regular annual session, will be held at Atlantic City, New Jersey; the 1948 meeting will be at St. Louis, Missouri.

A. W. Adson, M.D.
W. A. Coventry, M.D.
E. W. Hansen, M.D.
F. J. Savage, M.D.
Delegates to the American
Medical Association

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

AMERICAN DOCTORS EVIDENCE UNITY AT AMA ANNUAL SESSION

Unity of thought and purpose—to preserve the American system of medicine—marked the ninety-fifth annual session of the American Medical Association, held in San Francisco, July 1-5, 1946.

The great strides in the scientific field which the profession has made during the past year were matched by the earnestness with which doctors have been working to perfect a country-wide plan for voluntary prepaid medical service. This was evidenced both in the reports turned in, summarizing the year's activities, and in the thoughtful discussions presented by the Association leaders, indicating their keen awareness of the problems facing medicine today.

Attendance at the session exceed 7,500; and the weather was magnificent, making the session, all in all, a highly successful one.

During the year, the association has advanced its own prepaid medical care plan, a voluntary one, as opposed to the Wagner-Murray-Dingell bill, which would nationalize medicine on a compulsory basis.

According to Dr. E. J. McCormick of Toledo, Ohio, chairman of the AMA Council on Medical Service and Public Relations, prepaid medical plans have been set up by associations in thirty-one states with twelve others completing plans.

It is the goal of the AMA that all of these plans be tied together under a national setup so that subscribers to the plan in one state may transfer or receive care from the organization in another state.

Calls for "Medical Statesmanship"

In an address keynoting the sessions, retiring president, Dr. Roger I. Lee, called for more "medical statesmanship" from doctors, declaring that doctors have a right to sit at the "council table." He challenged the younger doctors of America to fight for control of their profession at a time when a changing order in medical practice is coming to pass.

Dr. Lee acknowledged the fact that "governmental interest may be benevolent, at least in intent," but he said that the AMA is bitterly opposed to governmental control of medicine.

It is nothing short of a grievous calamity that so few doctors are able to combine the practice of medicine and public office, he said. Physicians, with their knowledge of poverty, disease, suffering and sin, should have a voice in governmental affairs, not just as specialists to sit in the next room and be called in for consultation as a last resort.

Dr. Harrison H. Shoulders, Nashville, Tenn., president-elect, affirmed Dr. Lee's statements, warning that in this period of reconstruction "political crackpots, yearners for political power, enemies of freedom and importers of alien philosophies of government find favorable opportunities for their most strenuous activities." He also urged AMA delegates to lend freely the knowledge and experience of the AMA to veterans and veteran organizations so that "sound medical policies can be adopted in the interests of the veteran, the public and the medical profession."

"This association," said Dr. Shoulders, "is interested in making high quality medical care available to all people at a cost within their reach and without interposition of a government agency between a patient and his doctor."

Future of General Practice Cited

A warning that the general practitioner, not the specialist, is the basis of U. S. medicine, and should the general practitioner disappear so will the entire American system of medicine, was sounded by Dr. Wingate M. Johnson, Winston-Salem, North Carolina, in an address before the delegates.

Dr. Johnson was confident, however, that the family doctor *will* survive—that he won't "stay buried"—because there is room for both specialist and general practitioner.

"Just as the general contractor will sublet responsibility for plumbing, heating, lighting and highly specialized work," Dr. Johnson explained, "so the family doctor will refer cases requiring special skills to those who are trained to handle them.

"If the family doctors do not survive there is little chance for a free medical profession to survive; in normal times the average citizen cannot afford to go from one specialist to another unless the government pays the bill."

In recognition for devoted service to American medicine, Dr. Olin West was elected by the delegates to the presidency of the association. Having served nearly a quarter of a century as secretary and general manager of the AMA, and but recently retired from that office, Dr. West was unopposed for the office.

In his first address to the delegates as president-elect, Dr. West hit at various charges and rumors as to the hierarchy that supposedly exists in the association.

Said Dr. West: "I have been a member of the AMA for close to fifty years. Through that period I have been in close contact with the organization and its workings. I have looked for a hierarchy since I first heard it mentioned and, if I understand the meaning of the word, I have never found it."

Variety of Resolutions Introduced

Resolutions presented on the floor of the House of Delegates covered a variety of subjects. Among those winning out in the final action of the delegates were measures condemning various congressional bills calling for federal control of medicine, the Wagner-Murray-Dingell Bill, and the Pepper Bill. The bill, introduced by Senator Robert Taft intended as a substitute measure for the Wagner-Murray-Dingell proposal, was catalogued by the delegates as "still in the formative stage." Recommendations were made for the appointment of a committee to confer with the authors of the Taft Bill.

A resolution, asking that the United Nation's health organization concern itself only with problems related to prevention of dissemination of disease between nations, was adopted. It specified that all matters pertaining to the nature of medical practice in individual nations be left to the nations themselves.

It was resolved that the House of Delegates recommend that each state medical society assume leadership in developing adequate mental disease programs within the state and that all state organizations co-operate with each other and with allied groups to further research activities in the field of mental diseases and to improve the care of the mentally ill.

The delegates voted to look with favor upon industrial health activities advanced by management and labor, such as the national bituminous wage agreement, and adopted a resolution demanding that scientific and ethical medical standards be maintained in such programs.

VOLUNTARY PREPAYMENT MEDICAL CARE PLANS PROGRESS RAPIDLY

A recent bulletin published by the Council on Medical Service and Public Relations and the Bureau of Medical Economics of the American Medical Association reports on the status of voluntary prepayment medical care plans in the United States the data having been obtained directly from executives of each of the plans.

Besides giving a brief résumé of the major features of forty-five individual plans, the booklet traces the growth and development of voluntary prepayment medical service, which it describes as a relatively new organization. It is reported that the growth in the number of plans and in the number of states in which plans are either operating or in the process of development is satisfactory, in fact, beyond the hopes of many six months ago. The bulletin says that from 1939 to 1946 medical plans have enrolled 2,845,000 subscribers.

Among the thirty-one states with voluntary prepayment medical care plans in operation by May, 1946, there are fifty-one different plans included. Twenty-three states have only one plan each, in most cases state-wide. Four states have two plans each, a state plus a local plan, or two plans dividing the state. Three states have three plans; one state has five and one six. Thirty-four of the plans operate in co-operation with Blue Cross. Minnesota is one of the nineteen states listed with plans not yet complete or in the process of organization.

Plans Must Meet Council Standards

In order that prepaid medical service plans in the country shall be organized and operated in accordance with standards which adequately protect the interests of the public and the medical profession, the Council on Medical Service and Public Relations is granting special recognition, the council seal of approval, to all plans meeting the following requirements: (1) local approval, (2) professional control, (3) provision for arbitration to adjust complaints, (4) free choice of physician, (5) retention of traditional doctor-patient relationship, (6) adequate dues through premium rates, (7) provision for the greatest possible benefits in medical care to subscriber, (8) statement of benefits in terms of cash indemnity or service units, (9) clear statement of conditions and benefits on contract, (10) reasonable and truthful promotional activities, (11) sound, actuarial enrollment practices, and (12) conformity with state laws, as well as foundation on an insurance accounting basis, with an appropriate state authority supervising operation. The council requires that each accepted plan must submit periodic reports of financial and enrollment details; and it stipulates that its acceptance of plans will be for a period of two years, or until revoked. Any changes in contracts or literature during the period of acceptance must be submitted to the council for review.

The council has formulated these principles and standards for guidance. This approval carries the privilege of using the "Seal of Acceptance" of the Council on Medical Service and Public Relations. This, the Blue Shield, should provide a simple descriptive phrase for identifying the program to the public.

A year ago, the bulletin states, the biggest problem in the prepayment medical care program was stimulating the state and county medical societies to organize plans. This problem is now well on the way to solution. The big question now is that of devising ways and means for increasing enrollment. The emphasis during the remainder of 1946 should be on the education of the public to the advantages of enrolling themselves and their families in voluntary prepayment medical care plans.

ROCHESTER COLLEGE OFFERS FIRST COURSE IN OPTICS

The Junior College of Rochester, Minnesota, will inaugurate a course in ophthalmic optics, the first of its kind, this fall as a part of its regular curriculum.

The two-year course, which is to train a limited number of carefully selected persons in the intricacies and details of the making, fitting and other mechanical skills concerned with the use of visual aids such as spectacles and eyeglasses, will be taught under the supervision of Dr. Charles Sheard, director of the division of physics and biophysical research of the Mayo foundation, Dr. Sheard is internationally known for his writings and research in visual optics.

Dr. Sheard in commenting upon the course has noted that for several decades there have been great advances in the professional and scientific phases of the problems and care of human vision. According to him, the most outstanding advances in the care of the eyes and the development of the finest courses of training have been made in this country.

"Side by side with this professional development and advancement," says Dr. Sheard, "has come a corresponding growth and progress in the mechanical and material phases of vision."

Course to Serve as Pattern

Dr. Sheard believes that this course at Rochester is a distinct contribution and that it may well serve as the pattern for the establishment of a limited number of similar courses in junior colleges or technical institutes in the United States.

The first year of the course covers fundamental science and mathematics with an introduction to the making of lenses. The second year is devoted mainly to the completion of training in mechanical optics and a thorough acquaintance and grounding in all phases of ophthalmic optics, since the making of modern visual aids has developed into an exact science.

Subsequent to this formal training it is expected that the student will serve an apprenticeship with some manufacturing or wholesale optical company and that on satisfactory completion of college and practical training, the person may be certified as a master ophthalmic optician.

The need for properly trained opticians has been cited as more pressing than ever during this postwar readjustment period. Possibilities of positions cover dispensing opticianry, association with manufacturing and wholesale organizations, and other contacts with ophthalmologists and optometrists,

A leading optical company has offered eight scholarships to cover fees and tuition of the second year of the course. Laboratory facilities available and placement in apprenticeships at present have limited the number who can be admitted to eight persons. The company will place in its own organization or elsewhere all who successfully complete the two-year curriculum.

COMMITTEE MEETS ON VETERANS FEE SCHEDULE AND CONTRACT

The fee schedule and proposed contract between the Veterans Administration and the Minnesota State Medical Association was the subject of a meeting of the Medical Advisory Committee on Veterans Affairs, July 15 at Hotel Saint Paul.

The committee met to make whatever revisions in the fee schedule and the contract were necessary, according to recommendations made by the various organizations of the specialties represented in the state, to which the fee schedule was submitted upon direction by the House of Delegates at its May meeting.

In an effort to give the specialty groups a chance to present what they consider fair rates for services rendered, the fee schedule was submitted to the following Minnesota organizations: the Minnesota Dermatologic Society and the Mayo Clinic Dermatologists; the Minneapolis Regional Chapter, American College of Physicians and Surgeons; the Minnesota Academy of Internal Medicine and the Mayo Clinic Internists; the Minnesota Academy of Ophthalmology and Otolaryngology; the Minnesota-Dakota Orthopedic Association; Pathologists Kano Ikeda of St. Paul and A. H. Wells of Duluth (since the state society is inactive); the Minnesota Radiological Society and the Mayo Clinic Radiologists; and the Surgical Societies of Minneapolis, St. Paul and Duluth, as well as the Mayo Clinic Surgical group.

The contract to be negotiated with the Veterans Administration was approved by the committee. After obtaining the approval of the council, as directed by the House of Delegates, the next step is to get the approval of the regional office of the Veterans Administration in Minneapolis. Following that, the contract and schedule will be sent to the Washington office of the Veterans Administration for national approval.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. Dubois, M.D., Secretary

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Minneapolis Woman Pleads Guilty to Criminal Abortion

Re: State of Minnesota vs. Marie Edmund

On June 12, 1946, Mrs. Marie Edmund, fifty-four years old, 400 Ridgewood Avenue, Minneapolis, entered a plea of guilty in the district court of Hennepin county to an information charging her with the crime of abortion. The case was referred to the probation officer for a pre-sentence investigation and on June 29, 1946, Mrs. Edmund was sentenced by the Hon. Frank Reed, Judge of the district court, to a term of 4 years in the Women's Reformatory at Shakopee. Judge Reed stayed the sentence and placed the defendant on probation for five years. Judge Reed strongly rebuked Mrs. Edmund for her illegal activities and warned her that if she violated the terms of her probation she would serve her entire sentence. Judge Reed also forbade Mrs. Edmund from doing any nursing or massage work in the future. The Court was asked to impose such restrictions by the Minnesota State Board of Medical Examiners.

Mrs. Edmund was arrested June 9, 1946, by Minneapolis police officers after two Minneapolis women had been admitted to General Hospital suffering from the after-effects of criminal abortions. Both women gave statements implicating Mrs. Edmund. Mrs. Edmund, a widow and the mother of three children, has been quite prominent in women's activities in Minneapolis. In a signed statement she admitted having been an abortionist for the past four years and that she had performed four criminal abortions in May, 1946, receiving $125 for the abortion she pleaded guilty to in court.

Mrs. Edmund told the court she was born in Zurich, Switzerland, in 1891 and moved to Hong Kong, China, in 1909; married in 1918 at Shanghai and came to Wheeling, West Virginia, in 1921. She further stated that she came to Minneapolis in 1922 and has been operating a rooming house at 400 Ridgewood for several years. She admitted that she has no license to practice any form of the healing arts but claims to have done massage work and practical nursing.

Red Wing Parolee Arrested for Illegal Practice of Medicine

Re: State of Minnesota vs. John George MacArthur.

On June 22, 1946, John G. MacArthur, eighteen years of age, 2915 Dean Blvd., Minneapolis, was arrested by Minneapolis police officers on a charge of practicing medicine without a license. MacArthur was arrested at the Lake Calhoun swimming beach where he was posing as a doctor at the first aid station. MacArthur stated he had studied medicine in France and at the University of Minnesota. Both statements are false. MacArthur's only acquaintance with the practice of medicine was as an orderly at two of Minneapolis' hospitals.

MacArthur's record shows that he was adjudged a delinquent in the juvenile court of Hennepin County July 31, 1942, following the theft of a radio and an electric fan. He was placed on parole and then stole some jewelry from a Minneapolis home he had illegally entered. For that offense he was committed to the State Training School at Red Wing on September 25, 1942. He was paroled from there August 24, 1943.

In the present case, MacArthur was ordered returned to the State Training School at Red Wing. He will not be released until his father who is employed at Louisville, Kentucky, makes arrangements to place him in a private school.

MINNESOTA STATE MEDICAL ASSOCIATION

House of Delegates

Saint Paul Session—May 19-20, 1946

In accordance with action taken by the Council in 1944, publication of the proceedings of the annual session of the House of Delegates is limited to summary. Proceedings have been mimeographed in complete form and sent to each of the delegates.

HOUSE OF DELEGATES

First Meeting, Sunday, May 19, 1946
Continental Room, Hotel Saint Paul
Saint Paul, Minnesota

The Ninety-third Annual Session of the House of Delegates of the Minnesota State Medical Association convened in the Continental Room of the Hotel Saint Paul, St. Paul, Minnesota, at 10 a. m., Dr. W. A. Coventry, Duluth, Speaker of the House of Delegates, presiding.

Speaker Coventry called the meeting to order and asked for the preliminary report from the *Credentials Committee,* Dr. C. L. Roholt, Waverly, Chairman. Dr. Roholt reported that a quorum was present, after which the Speaker called upon Dr. F. J. Elias, Duluth, for the report of the Chairman of the *Council.*

Dr. Elias: The first meeting of the Council in connection with the annual session was held on Saturday, May 18, at 2 p. m.

Separate motions were made and carried approving affiliate membership for: Catherine C. West, Minneapolis; Harry Winslow Allen, Minneapolis; John J. Ederer, Minneapolis; Joseph M. Hall, Minneapolis; Emma F. Michelson, Minneapolis; Jalmar H. Simons, Minneapolis; Henry E. Binet, Grand Rapids; Dana C. Rood, Minneapolis; Oscar Kozberg, Denver, Colo.; Roy M. Mayne, Duluth; and Zachariah E. House, Burbank, Calif.

With reference to membership dues, it was voted that the $5.00 assessment be continued for another year, and that the Council recommend to the House of Delegates that Article IX of the Constitution be amended to make the assessment permanent.

A resolution passed unanimously by the *Committee on Tuberculosis* advocating the retention of Tuberculosis work at Fort Snelling Hospital was approved.

It was suggested that the names of Drs. Charles H. and William J. Mayo represent Minnesota in the Hall of Fame at Washington. This will be further considered at the next meeting of the Council.

Regarding dues of members in good standing who have returned from military service and are taking fellowships, it was decided that discharged servicemen will be expected to pay dues for the year following that in which their terminal leaves expire.

A suggestion from the Committee on National Emergency Medical Service of the American Medical Association that a committee of seven members to be known as the Committee on Military Service be appointed was turned over to the *Committee on Military Affairs.*

The Council approved that Dr. Adson and Dr. Coventry succeed themselves as members of the House of Delegates of the AMA and that Dr. Hultkrans and Dr. Burnap succeed themselves as alternates.

Speaker Coventry then called for the financial report from Dr. Louis A. Buie, Rochester, Chairman of the *Finance Committee.*

Dr. Buie: The steady growth in the figures representing net worth of the Minnesota State Medical Association demonstrates that expenses have been subject to conservative control relative to income from all sources, and the result has been an expansion in the net worth of the organization which has been almost constant. Although those who are in a position to give expert opinion will attest that our financial position is satisfactory, we should not assume that we can relax our vigilant efforts toward increasing the stability of our financial condition. We contribute to many worthy projects in substantial amounts, but thus far we have been fortunate in that we have been spared any cataclysmic financial assault. During these chaotic times, I am sure that none would feel that such a possibility can be disregarded.

The investment portfolio of the Association has been subjected to the closest scrutiny of auditors and advisors in finance and from them your Finance Committee has learned that there is little which affords opportunity for adverse criticism. . .

Any success which has attended the activities of the Minnesota State Medical Association in the management of its financial affairs has been owing to the sound business principles which have been followed. The principles have been established because of the vision and capabilities of our confreres and our predecessors. Among the most important of their practices have been (1) the careful control of expenses by budgetary procedure, (2) conservative investment practices and (3) independent audit of all accounts.

An analysis of the income and expenses of the Association covering the period from 1933 to 1945 demonstrates that all of the trends in the affairs of the Association are on a basis of steady progress, with no evidence of deterioration either in the short or the long view. . . . Last year, for the first time in many years, the Association incurred a small net loss on its operations. This deficit was not considered to be cause for concern. With the circumstances of reduced income from dues, absence of customary revenues from the technical exhibit of the annual meeting, the increased disbursements for ordinary purposes of the legislative year, it is surprising that the loss incurred was not greater. It is true that expenses have shown a gradual and a definite upward trend. . . . This should be expected in an organization which shows progress, development and expansion of activities. We should expect this increase to continue. Because of this tendency, most state medical associations have found it necessary to increase their dues, and an analysis of this feature in other state medical associations proves that few have a membership fee as modest as ours. We expect that the end of the war, the return of physicians to active practice, the resumption of the annual meeting and other factors will improve our financial position and enable the Association to make the justifiable additions to its reserve account which have been customary in prior years.

You have heard the recommendation made by the Chairman of the Council on behalf of the Council, which met yesterday. That recommendation was to the effect that the matter of incorporating the $5.00 assessment as a permanent part of the dues of the Minnesota State Medical Association should be acted upon. As you know, the $5.00 assessment has been brought to the attention of the House of Delegates each year since the assessment was started; that is according to the original arrangement which requires the House of Delegates to approve that assessment on a yearly basis. We have asked that you approve that assessment for the present year. In considering that matter, I would like you to recall that the dues of all of the members who have been in the Armed Services will be remitted this year providing those members come back or are released from service during this year. In other words, any member of the Service who is released following the beginning of this year is not expected to pay dues; so that the increment from membership fees will not be aided materially or increased because the war is over until the expiration of this year.

The reports of the Chairman of the Council and the Chairman of the Finance Committee were accepted, following which the Speaker called for the reports of the reference committees.

Because of their brevity, the reports of the four following committees were accepted without comment: *Heart,* F. J. Hirschboeck, Duluth, Chairman; *Syphilis and Social Diseases,* P. A. O'Leary, Rochester, Chairman; *Vaccination and Immunization,* E. J. Huenekens, Minneapolis, Chairman; and *Conservation of Hearing,* L. R. Boies, Minneapolis, Chairman.

Dr. N. W. Barker, Rochester, Chairman of the *Reference Committee on Medical Education Reports,* called special attention to the report of the *Committee on First Aid and Red Cross,* of which Dr. J. S. Lundy, Rochester, is Chairman, commending the members for their work during the past year and especially their preparation of the sheet of recommendations concerning the uses of the various blood substitutes to be included with the packages of dried blood plasma being distributed to state physicians. The House of Delegates adopted the report of the *Committee on First Aid and Red Cross.*

The *Reference Committee* cited the excellence of the report from the *Committee on Medical Education and Hospitals* and the programs which it outlined for the postgraduate work of veteran medical officers. Dr. Barker called particular attention to the statement in the report concerning the plans of the University Medical School faculty to gradually decelerate while studying carefully the instructional program for the purpose of revision and improvement.

DR. BARKER: It is apparent that although there are some definite criticisms of the accelerated program which was adopted during the war, there are some lessons which have been learned which may be of value in the consideration of a limited acceleration over the pre-war curriculum. This is something I think we should be thinking about because the curriculum of the medical schools throughout the country has been extended over too long a period and with the present desire of most medical students and the necessity for post-graduate training, some consideration should be given and careful study made of the possibility for shortening the length of time of the regular undergraduate medical curriculum.

The Reference Committee also wants to call particular attention to the statements made in the report which concern the program for increasing hospital facilities, namely, that hospital facilities in many sections of the state are clearly inadequate, that much hospital building is planned for the next few years, but that even if the matter of physical facilities is solved, there still will be the problem of sufficient nursing, technical and other personnel needed to carry on the operation of hospitals, and further, the communities will be cautioned not to embark upon programs for hospital care that will eventually become a burden to the community.

The report of the Committee on Medical Education and Hospitals was adopted.

Before proceeding to the report of the *Committee on Public Health Nursing,* Dr. Mario Fischer, Duluth, Chairman, Dr. Barker mentioned particularly the statement in the report recommending that the Minnesota State Medical Association reaffirm its approval of the basic principles behind the defeated 1945 Legislative Session Bills known as H.F. 34 and S.F. 31, and that it continue to give the state Organization for Public Health Nursing its assistance in securing the adoption of a comparable measure by the 1947 Minnesota Legislature.

DR. BARKER: The principles and purposes of this bill are to encourage large numbers of rural counties to provide public health nursing services for their respective jurisdictions, and to provide State aid and appropriate State money for such services. Now, whether or not you who know about this bill are in favor of the bill as it stood in detail, I think the House of Delegates should go on record as approving the basic principles behind the bill.

The House of Delegates accepted the recommendation of Dr. Barker and the report of the *Committee on Public Health Nursing.*

The next report to be taken up by the Delegates was that of Dr. A. H. Wells' *Committee on Cancer,* which received recognition from Dr. Barker and the *Reference Committee* for its splendid work during the past year in behalf of the control of cancer through the encouragement of early examination and diagnosis. Specifically cited for approval was the work of the Committee in laying plans for the setting up of free cancer detection centers throughout the state. These centers are to be established with the approval of the County Medical Society; it was voted by the House of Delegates that the report be adopted and that the County Medical Societies be urged to establish such cancer detection centers as soon as they become feasible.

An extensive report was submitted to the House of Delegates by the *Committee on Tuberculosis,* J. A. Myers, Minneapolis, Chairman, including plans for tuberculosis control outlined by the sub-committee. Discussed in the report was an Ideal Tuberculosis Case-Finding Program, which was recommended for publication in MINNESOTA MEDICINE (see page 804). The Committee members were congratulated for the excellence and thoroughness of their work throughout the year. The report of their activities was approved.

With the acceptance of the Tuberculosis Committee report, the report of the *Reference Committee on Medical Education Reports* was brought to a close.

The next order of business was the report of the *Reference Committee on Miscellaneous Scientific Reports,* of which Dr. C. G. Sheppard of Hutchinson was Chairman.

The first report was that of the *Child Health Committee,* Dr. R. L. J. Kennedy, Rochester, Chairman, which called for the launching of a study of child health services in the state in co-operation with a national survey being conducted by the American Academy of Pediatrics. Dr. Kennedy was present and spoke to the Delegates concerning matters pertinent in the Child Health field. The Child Health report, advocating the publication of a leaflet on "Ringworm of the Scalp" for distribution to the public, the statewide survey of child health services and the preparation of a leaflet on rheumatic fever, was approved by the House of Delegates.

Reports of the following committees were adopted without comment: *Diabetes,* J. R. Meade, St. Paul, Chairman; *Fractures,* V. P. Hauser, St. Paul, Chairman; *Industrial Health,* A. E. Wilcox, Minneapolis, Chairman; *Interprofessional Relations,* W. P. Gardner, St. Paul, Chairman; *Medical Testimony,* E. M. Hammes, St. Paul, Chairman; *Maternal Health,* R. J. Moe, Duluth, Chairman; *Military Affairs,* R. H. Creighton, St. Paul, Chairman; and *Historical,* M. C. Piper, Rochester, Chairman.

Preceding the adoption of the report of the *Committee on Nervous and Mental Diseases,* Dr. W. P. Gardner, Chairman, some discussion was held in regard to the request in the report for support of the building program for the State Psychiatric Hospitals as outlined by the director of the Division of Public Institutions of the State of Minnesota. Dr. Sheppard suggested that the Minnesota State Medical Association go on record as favoring special units set aside from the State Hospitals for the care of the aged and also that the Association support the recommendation of the Committee to raise the standards of medical and nursing care in these institutions. Dr. Sheppard emphasized that part of the report which cited the deplorable situation in this State where the aged are institutionalized in State Hospitals for the Insane. The Delegates approved of the work of the Committee and the suggestions of Dr. Sheppard.

Approval was given to the members of the *Committee on Ophthalmology,* Dr. T. R. Fritsche, New Ulm, Chairman, for their interest in establishing an "Eye Bank" in Minnesota in the near future; and the report was accepted with the comment by Dr. Sheppard that it was the hope of the assembly that the Committee will be successful in the establishing of this Eye Bank.

The *Committee on Public Health Education,* of which Dr. S. H. Baxter, Minneapolis, is Chairman, received commendation for the splendid program it has carried out for the past year in preparing the Subject-of-the-Month packets, its distribution of vaccination and immunization leaflets and posters in co-operation with the State Department of Health, its sponsorship of exhibits on health matters for the Young Men's Christian Association and for the Minnesota State Dental Association's annual convention, and its carrying on of other activities concerned with keeping the public informed. Special recognition was given to Dr. William A. O'Brien for his excellent series of radio talks on health, which have been continued without interruption for eighteen years. Further mention was made of Dr. O'Brien's radio work in the report of the *Radio Committee.* The reports of the *Committee on Public Health Education* and the *Radio Committee,* of which Dr. R. M. Burns, St. Paul, is Chairman, were accepted, concluding the report of the *Reference Committee on Miscellaneous Scientific Reports.*

The next order of business was the reports of the *Officers* and *Councilors.* Speaker Coventry called upon Dr. J. R. Aurelius, St. Paul, to present these reports.

Dr. Aurelius said that his committee had considered the reports of the Officers and Councilors carefully and had found them to be complete. These reports were taken up as follows and adopted by the Delegates:

Secretary and Executive Secretary—B. B. Souster, M.D., St. Paul, and R. R. Rosell, Minneapolis

Treasurer—W. H. Condit, M.D., Minneapolis

Chairman of the Council—F. J. Elias, M. D., Duluth

Councilors:
First District—L. A. Buie, M.D., Rochester
Second District—L. L. Sogge, M. D., Windom
Third District—C. M. Johnson, M.D., Dawson
Fourth District—A. E. Sohmer, M.D., Mankato
Fifth District—E. M. Hammes, M.D., St. Paul
Sixth District—A. E. Cardle, M.D., Minneapolis
Seventh District—W. W. Will, M.D., Bertha
Eighth District—W. L. Burnap, M.D., Fergus Falls
Ninth District—F. J. Elias, M.D., Duluth

The Speaker then asked for the report of Dr. N. H. Baker, Fergus Falls, Chairman of the *Reference Committee on Medical Economics Reports.* The reports of the following committees in this group were accepted:

Medical Ethics—R. D. Mussey, M.D., Rochester, Chairman

Low Income and Indigent Problems—W. A. Coventry, M.D., Duluth, Chairman

Industrial and Contract Practice—R. F. McGandy, M.D., Minneapolis, Chairman

Editing and Publishing—E. M. Hammes, M.D., St. Paul, Chairman

Medical Advisory—W. H. Hengstler, M.D., St. Paul, Chairman

Public Policy—L. L. Sogge, M.D., Windom, Chairman

State Health Relations—T. H. Sweetser, M.D., Minneapolis, Chairman

Medical Economics—George Earl, M.D., St. Paul, Chairman

Medical Service—A. W. Adson, M.D., Rochester, Chairman

University Relations—E. L. Tuohy, M.D., Duluth, Chairman

Dr. O. J. Campbell of Minneapolis was called upon next for the report of the *Reference Committee on Miscellaneous Medical Economics Reports.* The first to be taken up was the report of the *Committee on Rural Medical Service,* of which Dr. B. J. Branton, Willmar, is Chairman. This committee was created in September, 1945, by action of the Council following the appointment of a similar committee by the Board of Trustees of the American Medical Association, for the purpose of co-operating with farm groups in the exploration and solution of rural health problems that exist in many areas today. The report of this committee, covering its activities in preparing the way for action in improving health conditions in rural Minnesota, was adopted by the House of Delegates.

Some discussion was carried on with regard to the importance of the proposed fee schedule and contract which the Minnesota State Medical Association and the Veterans Administration, which was the subject of the report of the *Medical Advisory Committee on Veterans Affairs,* Dr. R. H. Creighton, Minneapolis, Chairman. This committee is also of relatively recent origin, having been formed early in 1946 at the request of General Hawley, Medical Director of the Veterans Administration, who asked that state associations assume the responsibility for working out programs for veterans out-patients care in their respective states. The work of the committee in devising a schedule of fees which would be fair to all concerned and in arranging a contract which would provide the best medical care to returned veterans with service-connected disabilities, as outlined in the report, was approved by the Delegates.

In presenting the report of Dr. Branton's *Committee on Organization for Prepaid Medical Service,* created last year under the terms of the Enabling Act, Dr. Campbell spoke highly of the effort to shape up a workable plan for Minnesota made by the members. "Your Reference Committee pays the highest tribute to the work of this committee," he said. "Perhaps no undertaking of the state organization ever has demanded so much of a committee."

The House of Delegates voted to approve the method proposed by the Committee for the establishment at an early date of a voluntary prepaid medical service plan for Minnesota. With the acceptance of the report of the *Committee on Organization for Prepaid Medical Service,* the Committee reports were brought to a close.

A recommendation that a resolution be prepared commending Mr. Oscar C. Pierson and Dr. Orianna McDaniel, both of whom are retiring, for their long service to the State Board of Health was referred to the *Committee on Resolutions.* A proposed amendment to the Constitution and By-laws providing life memberships for physicians in the Association for forty years and having reached the age of seventy was referred to the Council. Resolutions regarding phases of the Emergency Maternal and Infant Care Program were referred to the *Resolutions Committee.*

The meeting was adjourned at 12:15.

Second Meeting, Sunday, May 19, 1946
Continental Room, Hotel Saint Paul
Saint Paul, Minnesota

The second session of the House of Delegates was convened at 3:15 p.m. with the first item of business a report from Dr. A. W. Adson of Rochester on a meeting of the *Council on Medical Service of the American Medical Association,* held to review certain Washington activities of concern to the medical profession.

Among the recent developments discussed by Dr. Adson was the action of the President when he removed the Children's Bureau from the Department of Labor and put it under the Federal Security Agency and when he abolished the social security board.

Dr. Adson reported on the status of a number of bills in Congress, among which were the Wagner-Murray-Dingell bill for the federalization of medicine, the Pepper bill to extend the EMIC program, the Hill-Burton Hospital Construction Bill and the Kilgore-Magnuson Educational and Research bill.

He said that the Washington observer for the AMA reports there is sufficient opposition to the Wagner-Murray-Dingell bill to cause it to be looked upon unfavorably. The bill which Senator Taft introduced, has not been endorsed by the AMA, although it does have some desirable features, such as providing for the centralization of all government-sponsored activities in the medical field, but it contains other provisions with which the profession cannot agree.

Dr. Adson also reported on the progress of prepayment medical plans throughout the country. According to latest figures at the time of Dr. Adson's report, 33 states had developed and were using some form of prepaid medical care, 29 of these with plans in actual operation and four with plans ready to go, Minnesota comes in the latter group. Eighteen different plans were represented in the 33 states, most plans employing physician sponsorship. The present goal of the Council, Dr. Adson said, is to encourage every state to participate in the program for development of voluntary prepaid medical service.

Speaker Coventry next called on Dr. W. F. Braasch of Rochester who endorsed the information presented by Dr. Adson. He said that the AMA Board of Trustees has been working with the Council on Medical Service and thoroughly approves of its actions. Both organizations have met together frequently in the exchange of ideas and together with the House of Delegates are looking forward to the increased development of prepayment plans according to the ideals of the Council and the Board of Trustees.

Dr. Braasch reported on *Minnesota Procurement and Assignment services,* which were officially terminated on May 1. He said that during the war, a total of 1,638 physicians were in the medical corps of the armed services, and to date it was reported that from 700 to 1,000 men had been released, leaving 700 to 800 not yet returned to private practice in the state; included in this are many interns, residents and fellows in the various hospitals in the state, in the University and at the Mayo Clinic.

The office of Procurement and Assignment, Dr. Braasch said, has been used, in conjunction with the other services at the state headquarters, in giving information to veterans in regard to opportunities in various communities of the state. A survey of the state was made as to the status of medical practice and opportunities. Information of this kind was obtained from many other state associations by the AMA and was made available to returning servicemen and has been of great assistance to them.

Dr. Braasch then reviewed the work of the Committee on National Emergency Medical Service, created by the AMA to study the problems of administrating the medical corps of the armed services.

Speaker Coventry announced that a copy of this report was to be placed in the files and a copy was to go to the State Military Affairs Committee. He then asked Dr. F. J. Hirschboeck of Duluth for the report of the *Resolutions Committee.*

A resolution was presented and passed commending and thanking the following organizations and groups:

The officers and members of the Minnesota State Medical Association
The officers and members of the Ramsey County Medical Society
The Local Arrangements Committee of the Ramsey County Society
The Management of the Hotel Saint Paul
Radio Stations WCCO, WTCN and KSTP
The Minneapolis *Star-Journal* and *Tribune,* the Duluth *News-Tribune,* The St. Paul *Dispatch and Pioneer Press* and the Rochester *Post-Bulletin.*

A resolution commending and thanking Dr. William A. O'Brien for his splendid talks on health matters and to Stations WCCO, KUOM, KROC and KFAM for their public spirit in making time available gratuitously for these programs was adopted.

A resolution was passed expressing deep regret by the members of the Association at the resignation of Dr. Olin West as Secretary and General Manager of the AMA and directing the Secretary to transmit an expression of appreciation to him for his unselfish and devoted service on behalf of the membership of the Minnesota State Medical Association.

A resolution was passed extending the thanks and appreciation of the Association to Dr. Buie, the members of the *Finance Committee* and their advisors for painstaking and efficient work.

It was resolved that the House of Delegates express for the Association its sincere appreciation to Dr. Orianna McDaniel and to Mr. Oscar C. Pierson upon their retirement from the State Board of Health.

A resolution was passed directing that the Medical School of the University of Minnesota be respectfully petitioned to establish and provide combined residencies in ear, eye, nose and throat to meet existing needs in rural areas of the state for men with such combined training.

Following these resolutions, the meeting was adjourned at 4 p.m.

Third Meeting, Sunday, May 19, 1946
Continental Room, Hotel Saint Paul
Saint Paul, Minnesota

The meeting was convened at 8:15 p.m., Dr. Coventry presiding.

The first order of business was a report of the *Division of Social Welfare of the Minnesota Social Security Department,* read by Dr. E. M. Jones of St. Paul, in the absence of Mr. Jarle Leirfallom.

Mr. Leirfallom's report stated that the Division appreciates tremendously the fine relationships which it has had with the medical practitioners of this state, and that it is particularly appreciative of the work done by the Association President, Dr. Simons, who is both a champion of American medicine and a firm believer in modern social welfare methods and technics.

The report outlined the old age assistance medical program which has been carried on more successfully since the Legislature removed the $40 maximum for medical care. Another matter discussed was the recent direct attempt of a federal agency to encroach upon private practice of medicine in Minnesota, through the installation of procedures and policies which are questionable in the opinion of the Social Welfare Division.

It was further reported that the program of the Division is still being operated so far as possible on the basis of maintaining local initiative and responsibility and not imposing state domination on local communities any further than is necessary.

Next Dr. Coventry called for the report of the *Minnesota State Board of Examiners in the Basic Sciences* from Raymond N. Bieter, Secretary-Treasurer.

Dr. Bieter reported that during the past year, three examinations have been given by the Board with 230 individuals passing the examinations and thirty-seven failing, making a total of 267 persons examined. The report was accepted by the Delegates, after which the report of Mr. Ray Amberg on the progress of the Minnesota Hospital Survey was given.

Mr. Amberg reviewed the purpose of the survey, which is being conducted by a committee set up at the request of the State Medical Association and the State Hospital Association through Governor Thye. He said that the principal concern of the committee is to find out what we have in Minnesota. Dr. Viktor O. Wilson has been appointed chairman of the *Survey Committee* and plans are to hold regional meetings later on. It is proposed to go into the social and economic factors that are present in the state areas to get an answer to the state needs, thus eliminating the need for federal control.

Dr. A. J. Chesley, St. Paul, was then asked by the Speaker to present his report on the activities of the *State Board of Health.* He added further to Mr. Amberg's remarks, stating that the hospital survey, which is closely allied with the hospital licensing carried on by the Board of Health, was to get underway May 7. He also summarized the program of the distribution of surplus blood plasma, the sanitation work, and the work done by the *State Board of Health* under the EMIC program.

Dr. J. F. Du Bois, Sauk Center, was called upon by the Speaker for his report on the *Minnesota State Board of Medical Examiners.* He brought up several problems, and presented a statistical summary of the year's activities of the board. Following this report Dr. Sheppard brought up several recommendations which had been referred at the previous meeting to his *Resolutions Committee.*

The first matter to be discussed was that of the EMIC program and the future of the Consultants Directory ("Blue Book"). A joint meeting of the *Reference Committee on Miscellaneous Scientific Reports,* the *Resolutions Committee* and the *State Advisory Committee* on the EMIC Program was held to study the background of the EMIC program and a set of recommendations were drawn up. It was the conclusion of this Study Committee that because of the fact that the EMIC program is self-limiting, due to expire in the near future, it would be well for the members of the medical profession in this state to do the best they can under the present setup. The Committee recommended that copies of the report be made available to the membership. The report of the Study Committee was accepted.

Dr. Sheppard read a resolution recommending that the practice of listing special societies, in place of conventional hospital staff lists, be abolished, whereupon the resolution was referred to the *Resolutions Committee* to be reported on at the following session of the House of Delegates.

A resolution was presented for the appointment of a committee of Drs. Frank E. Burch, St. Paul, William Benedict, Rochester, Erling Hansen, Minneapolis, and Frank Knapp, Duluth, to investigate the possibilities of a Minnesota "Eye Bank," in accordance with the report of the *Committee on Ophthalmology*. This matter was referred to the *Committee on Miscellaneous Scientific Reports*.

Dr. F. W. Lynch, St. Paul, then presented the *Necrology Report*. The House of Delegates rose in silent tribute to the memory of the departed members and former members.

The meeting was adjourned at 10 p. m.

Fourth Meeting, Monday, May 20, 1946
Terrace Cafe, Hotel Lowry
Saint Paul, Minnesota

The House of Delegates convened for its final session at 1:20 p. m., Dr. Coventry presiding. Upon receiving the report of the *Credentials Committee* that there was a quorum present, the Delegates proceeded to the report of the *Resolutions Committee*, made by Dr. Hirschboeck.

The resolution recommending the discontinuation of the posting of certain classifications in hospitals of the State of special societies was recommended for transferral to the *Committee on Ethics* for further investigation. However, it was decided to turn the matter over to the Council.

The resolution to abolish the Directory of Consultants of the EMIC program was tabled by the Delegates in view of previous action which negated some of the considerations advanced in the resolution.

The next order of business was the election of officers of the Minnesota State Medical Association, and the following officers were elected unanimously:

President-elect: Louis A. Buie, Rochester
First Vice President: Carl B. Drake, St. Paul
Second Vice President: L. R. Gowan, Duluth
Secretary: B. B. Souster, St. Paul (re-elected)
Treasurer: William Condit, Minneapolis (re-elected)
Speaker of the House: William A. Coventry, Duluth (re-elected)
Vice Speaker: C. G. Sheppard, Hutchinson
Councilor, First District (to fill the unexpired term of Dr. Buie): R. L. J. Kennedy, Rochester
Councilor, Third District: C. M. Johnson, Dawson (re-elected)
Councilor, Fifth District: E. M. Hammes, St. Paul (re-elected)
Councilor, Seventh District: W. W. Will, Bertha (re-elected)
Delegates to the American Medical Association: A. W. Adson, Rochester, (re-elected) and W. A. Coventry, Duluth (re-elected)
Alternates: W. L. Burnap, Fergus Falls, (re-elected) and J. C. Hultkrans, Minneapolis (re-elected)

It was then moved, seconded and carried that the invitation extended by Dr. L. A. Barney, acting for the St. Louis County Medical Society, to hold the *1947 meeting* in Duluth be accepted.

Speaker Coventry called on Dr. Elias for a report of the Council proceedings. Dr. Elias stated that affiliate membership for Dr. John Crewe of Rochester had been approved by the Council. Dr. Elias read the following amendment to the By-laws of the Association, which the Council recommended for adoption:

> "Any person who has been an active member of this Association for 40 years and has reached the age of seventy years is eligible for Life Membership. Such person may apply for such membership through his component Society, to the Council of the Association, and, upon favorable action by the Council, become a Life Member, enjoying all the rights and privileges of Active Membership, but exempt from the payment of dues to the State Association. Life Membership in this Association is subject to all the conditions of Active Membership. The privilege of receiving MINNESOTA MEDICINE shall be extended to Life Members upon payment of the regular subscription price."

The adoption of this amendment was moved, seconded and carried.

Dr. Elias reported that the Council formally adopted a motion that the report of the discussion and recommendations relative to the EMIC program in Minnesota made by the special Study Committee be sent to the entire membership along with a short letter calling attention to the importance of the report. It was also agreed upon by the Council that the report be edited for MINNESOTA MEDICINE and that Dr. Simons give it space in the President's Letter.

Some discussion was then held by the Delegates following Dr. Elias' report of Council action with regard to a Prepaid Medical Service Plan for Minnesota. This was followed by a motion that a letter to the House of Delegates on matters pertaining to the Minnesota Medical Service Plan together with the Contract and the Pledge, be sent out from the State Office. This was seconded and carried.

At 3:20 p.m. the Ninety-third Annual Meeting of the House of Delegates was adjourned.

SPECIAL FEATURES

At the annual banquet of the Minnesota State Medical Association, held in the Continental Room of Hotel Saint Paul, Tuesday evening, May 21, special recognition was given to several Minnesota physicians.

Admitted to the *Fifty Club*, in recognition of their fifty years of membership in and service to the Minnesota State Medical Association were the following nine doctors: Charles Bolsta, Ortonville; Leonard E. Claydon, Red Wing; Charles Germo, Balaton; Charles D.

Harrington, Wayzata; Aaron E. Henslin, Le Roy; Edgar A. King, Minneapolis; George P. Kirk, East Grand Forks; M. Keller Knauff, St. Paul; and Edward E. Novak, New Prague.

The *Southern Minnesota Medical Association Medal,* awarded each year to the individual physician who presents the most outstanding scientific exhibit at the meeting, was awarded this year to Dr. Kano Ikeda of the Charles T. Miller Hospital, St. Paul, for his exhibit, "Routine Color Photography." Honorable mention was made of the work of Drs. Theodore E. Bratrud and W. H. Thompson, University of Minnesota departments of pathology and pediatrics, for their study, "Hyperfunction of the Adrenal Cortex"; Drs. T. J. Kinsella, Minneapolis, and E. R. Crow, Minnesota State Sanatorium, Ah-Gwah-Ching, for their exhibit, "Extrapleural Pneumothorax and Oleothorax," and Dr. E. Gellhorn, University laboratory of neurophysiology, for his exhibit "Experimental and Clinical Epilepsy." Judges of the scientific exhibits were Drs. Louis A. Buie, Rochester; William A. O'Brien, Minneapolis, and J. W. Prentice, Ashland, Wis.

In appreciation of his many years of service to the profession and to the Association, Dr. William A. Coventry of Duluth, former President of the Minnesota State Medical Association and present Speaker of the House of Delegates, was presented with the *1946 Distinguished Service Medal and Citation.*

Presentation of Distinguished Service Medal to Dr. W. A. Coventry

Dr. Simons: I deem it a great privilege, as President of the Minnesota State Medical Association, to honor one of our most active and distinguished members this evening. I say distinguished because he has served our Association long and well—as a former president, as committee chairman, as member of the Council, as delegate to the American Medical Association and now, as Speaker of our House of Delegates.

In civic and fraternal affairs, too, he has held many positions of leadership with distinction. We mention only a few here: The Duluth Chamber of Commerce, of which he held the office of president; the Minnesota Arrowhead Association, of which he is past president: the Kiwanis Club, where he served as governor and president; and the Shrine of which he was Potentate.

A prominent surgeon of Duluth, he was an organizer of the Duluth Clinic and is today the head of its Surgery Division. A fellow of the College of Surgeons, his affiliation with other societies relating to his profession are numerous. Among these are the St. Louis County Medical Society, the Minnesota State Association of Obstetrics and Gynecology; the Central Association of Obstetrics and Gynecology; the American Association of Obstetrics and Gynecology and Abdominal Surgery; the American Board of Surgery; the Western Surgical Society; the Minnesota Surgical Society, and the Duluth Surgical Society.

For his devoted and illustrious contribution to scientific medicine, for his untiring service in behalf of organized medicine, for his outstanding contribution to civic betterment, the Council of the Minnesota State Medical Association awards its distinguished service medal for 1946 to Dr. William A. Coventry of Duluth. It is an honor and a great pleasure for me to confer upon him at this time this citation which I hold in my hand, together with this distinguished service medal of which Dr. Coventry is so richly deserving.

In Memoriam

JOSEPH M. HALL

Dr. Joseph M. Hall, a practicing physician in Minneapolis for thirty-two years, died July 19, 1946, of heart disease which had forced his retirement from practice six months previously.

He was born in Minneapolis December 18, 1887, and attended North High School. He obtained his medical degree from the University of Minnesota Medical School in 1913 and interned at Minneapolis General Hospital.

Dr. Hall was a member of the Hennepin County Medical Society, and the Minnesota State and American Medical Associations. He was a member of the staff of Asbury Hospital.

He is survived by his wife, his mother, Mrs. Mary Alice Hall, Minneapolis, and his son, Allan M. Hall, New York.

NELS ANDREW GUNDERSON

Dr. Nels Andrew Gunderson, Minneapolis, died July 17, 1946, following a heart attack.

He was born March 24, 1896, in Wisconsin. He was graduated from the University of Minnesota Medical School in 1921 and became a member of the Hennepin County Medical Society and the Minnesota State and American Medical Associations. He was also a member of the Scottish Rite and at one time was chief of staff of the Swedish Hospital.

Dr. Gunderson is survived by his wife and three sons: Ensign Nels Andrew, III, Jerome David, recently discharged from service, and Don Howard.

DANIEL CAMERON LOCHEAD

Dr. D. C. Lochead of Rochester, Minnesota, died March 14, 1946. He was born January 19, 1878, at Almonte, Ontario. He received his medical education at Trinity Medical School and at Toronto Medical School, obtaining his M.D. degree in 1905. He practiced in North Dakota from 1906 to 1910 and at Saskatchewan from 1910 to 1921, when he moved to Rochester.

Dr. Lochead obtained a degree in Public Health from the Toronto Medical School in 1915 and was Deputy Health Officer of Rochester for many years. In 1928 he was elected Honorary Member of the Olmsted County Medical Society.

POLIOMYELITIS

(Continued from Page 770

44. Ward, R., and Sabin, A. B.: Presence of poliomyelitis virus in human cases and carriers during winter. Yale J. Biol. & Med., 16:451, 1943-44.
45. Weaver, H. M.: Resistance of cotton rats to the virus of poliomyelitis, as affected by intake of vitamin B complex, partial inanition and sex. Am. J. Dis. Child., 69:26, 1945.
46. Weaver, H. M. et al.: Acute anterior poliomyeelitis during pregnancy. Am. J. Obst. & Gyn., 47: 495 (April) 1944.
47. Zinsser and Bayne-Jones: Poliomyelitis. Textbook of Bacteriology, 8th edition.

Minneapolis Surgical Society

Stated Meeting Held March 7, 1946

The President, Robert F. McGandy, M.D., in the chair

OBSTRUCTIVE JAUNDICE

Report of Case

E. G. BENJAMIN, M.D.
Minneapolis, Minnesota

This report is that of a housewife, sixty-four years of age.

Complaint on admission: weakness over a period of two years; jaundice for two years; dryness of the skin and itching; loss of 40 pounds in weight during the past year. Present illness: The patient's main complaint has been weakness. At first she weighed around 160 pounds, but in a year's time her weight dropped to 118, which weight she has held for about a year. The patient states that one of the first things she noted was the yellowish color of her eyes and skin. This jaundice has persisted ever since with varying intensity. The jaundice was accompanied by marked dryness of the skin and mucous membranes and marked itching. It was not accompanied by any pain. She has been quite constipated for the last three to four weeks, and stools have been clay colored. She states that until the present illness she had never been sick.

The following letter was received from her previous doctor relative to an examination that was done elsewhere: "Mrs. H. was first examined on July 29, 1937, when she came complaining of painless jaundice which she had had since December, 1936, and which had been diminishing since March, 1937. On examination, the liver was palpable but there were no tenderness, firmness, or definite nodules present. The urinalysis was negative. The hemoglobin, blood count and blood flocculation tests for syphilis were normal. There was no anemia. The differential blood count was normal. Gastric analysis showed the gastric acids to be normal. Roentgenograms of the stomach and chest were negative. Roentgenologic study of the gall bladder showed a poorly functioning organ with a suggestive primary shadow of a pathologic gall bladder. The serum bilirubin on admission was 2 mg. and the van den Bergh reaction was direct. A liver function test showed a dye retention, grade 4.

"It was thought that there was a possibility that the gall bladder was palpable here and felt the condition might well be surgical. As Mrs. H. appeared to be gaining at the time, it seemed well, however, to go along with close observation on a medical regime.

"She returned a month later and had made very definite improvement in the interim. Her jaundice seemed to be clearing slightly although the serum bilirubin was 1.8 mg. with a direct reaction, which showed no significant change. Under the circumstances, as the dye retention test persisted at a retention of grade 4, it seemed best to continue a medical regime with observation, and accordingly she was advised to continue on a high-carbohydrate, low-protein, high caloric diet with Haliver oil and various general measures in an attempt to improve her condition.

"It was suggested that she return for observation in about six weeks but she did not return except after a lapse of thirteen months when she came in on October 24, 1938. At this time, the liver was palpable across the upper abdomen and down about four fingers breadth on the right. It was firm but not nodular. She was quite markedly jaundiced. The serum bilirubin showed a direct van den Bergh reaction and was 14.7 mg. per cent. The urinalysis showed a moderate amount of albumin, a slight reduction in Benedict's solution and a large amount of bile. The hemogoblin was 12.9 grams with 3,620,000 erythrocytes and 11,500 leukocytes. Fluoroscopic examination of the esophagus failed to show the presence of varices. The spleen could not be palpated.

"It was felt that it was probably a primary liver disease which was in the nature of a biliary cirrhosis and that there was nothing to accomplish by exploration. The prognosis is not too good at this time and I see nothing to suggest in the way of therapy other than the high carbohydrate diet."

Inventory by Systems: Head and neck: wears glasses for reading; no history of vertigo; no impairment of hearing; no complaint of ears or throat. Cardiorespiratory; no shortness of breath or exhaustion; no dyspnea, cyanosis or palpitation. Gastro-intestinal: Up until present complaint, history has been essentially negative. She has been very jaundiced, with constipation and clay colored stools. She has been nauseated only once with a small emesis. Genito-urinary: no frequency, burning or pain. Gynecological: post-menopause, no symptoms. Extremities: there has been a dryness of the skin accompanied by itching.

Past History: The patient has had the usual childhood diseases and diphtheria. She has had no previous operations, and up until the present illness has been in good health.

Family History: Her father and mother are both dead. She has one brother and one sister alive and well. One sister died in childbirth. She has three children of her own living and well; one died of pneumonia.

Physical Examination: The patient is a rather emaciated white woman, weighing 118 pounds. The sclerae are yellow, but the eyes react to light and accommodation. Pupils are round and equal. The ears and nose are negative. The throat is somewhat reddened and granular. The tonsils are enlarged. She wears complete dentures. There is marked adenopathy present in the right submaxillary region. The chest is symmetrical and has good expansion. The breath sounds are normal. No râles. The heart sounds are normal, no murmurs. Blood pressure 150/80. The abdomen reveals the liver palpable about three to four fingers below the costal margins. There is no tenderness or rigidity. The skin is very wrinkled and quite brown, and very dry. Pigmentation is fairly regular. The brown color is rather queer and hard to describe, but gives one the impression of being of hematogenous origin. The pelvis is normal. The extremities show some pitting.

Laboratory: Urine sp. gr. 1.009, trace of albumen, no sugar, alkaline, slightly cloudy, straw colored. Microscopic: negative. Blood: Hgb. 74 per cent; red cells 3,860,000; white count 8,400, small and large lymphocytes 29 per cent, mononuclears 4 per cent, transitional 0.5 per cent, neutrophiles 65 per cent (5 bands), eosinophiles 1.5 per cent; bleeding time 3 minutes; clotting time 5 minues 15 seconds. Color index: 0.9 plus; icterus index (11/7/38)—55; icterus index (11/12/38)—16. Van den Bergh: direct reaction—normal; indirect—positive. Kline and Wassermann negative. Gastric analysis negative.

Pre-operative Diagnosis: Possible biliary cirrhosis: jaundice, loss of weight, general weakness, previous examination elsewhere revealed pathological gall bladder which functioned poorly.

Detailed description of operative technic and operative findings: Under gas-ether anesthesia, a high right rectus incision was made. The peritoneum was opened and the contents of the abdomen explored. The liver was found to be slightly increased in size, had a very hard surface, was grayish in color, the typical picture of cirrhotic hepatitis. A small fibroid of the uterus was present. There were a great many firm fibrous adhesions around the gall bladder and ducts. The gall bladder was exposed with some difficulty. A large stone about 2 cm. was palpated in the region of the juncture of the cystic and common ducts. It was thought there was some impigment on the common duct due to pressure from the stone. During the process of freeing the adhesions around the gall bladder, the gall-bladder wall was torn at the fundus and there was drainage of clear, straw-colored bile. The patient's general condition became critical, so no further surgery was attempted. The stone was removed without any difficulty through the opening in the fundus and a large rubber tube was sutured into the fundus. One large Penrose drain was left in the gall-bladder area.

After the immediate effects of the operation, the patient's general condition improved very rapidly, the bile drainage became profuse, on the sixth postoperative day it was 800 c.c., on the eighth day 1,100 c.c., on the tenth day 1,175 c.c and on the eleventh day it was 1,400 c.c. The stools at this time were clay colored.

On the twelfth postoperative day the tube was accidently pulled out of the gall bladder and from that time on there was no more external bile drainage. Bile salts were given by mouth and the stools from this time on became greenish to brown.

She was out of bed on the eleventh postoperative day and discharged from the hospital on the twenty-first day. Her weight on date of discharge was 109 pounds. One month following her discharge, the patient reported that she was gaining strength very rapidly, the jaundice was clearing up, the itching of the skin was gone, the appetite was good, and the patient seemed quite well. Her weight then was 124 pounds, stools were normal. Three months after discharge she had no special complaint, her strength was good and weight 140 pounds, and recovery seemed to be almost complete.

Final Diagnosis: Cholelithiasis with associated jaundice (obstructive) and biliary cirrhosis.

CHOLECYSTECTOMY

An Analysis of 250 Consecutive Operations

ORLANDO P. JOHANN, M.D.*
Minneapolis, Minn.

The mortality and complications accompanying surgical operations have been reduced but not entirely eliminated despite the great progress which has been made in the field of surgery during the recent years. Among the factors which are responsible for the lowered incidence of complications and deaths, are the advent of chemotherapy and its application to various fields of surgery, careful pre-operative preparation, improved anesthesia, meticulous surgical technique, and individualized postoperative care.

An analysis was made of 250 consecutive cholecystectomies which were performed at Asbury Hospital in Minneapolis from January 1, 1942, to October 31, 1945, by a group of twenty-five doctors. During this period, a total of 14,425 operations, of all kinds, was performed in the Asbury Hospital. Nine of the group of twenty-five doctors in this series are members of the Minneapolis Surgical Society, and they performed 193 of the 250 cases, or 78.4 per cent of the total number of cholecystectomies. Three of the members of the Minneapolis Surgical Society did 142 of the cholecystectomies, or 57 per cent of the total number. The age of the patient, sex, postoperative hospital stay and the type of anesthesia will be considered in this analysis with special reference to the complications and mortality. All operations on the gall bladder and duct system in which a cholecystectomy was performed are included in this analysis.

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*Resident in Surgery, Asbury Hospital, Minneapolis, Minnesota.

TABLE I

Age Group	No. of Patients	Percentage
10-20	1	0.4%
20-30	25	10.0%
30-40	54	21.6%
40-50	63	25.2%
50-60	76	30.4%
60-70	29	11.6%
70-80	2	0.8%
Totals	250	100.0%

Cholecystectomy without any other additional operation occurred in only 113 of the cases. There were ninety-three cases in which a cholecystectomy plus an appendectomy were performed or an incidence of 37.2 per cent for routine appendectomies during gall-bladder surgery. Abdominal operations other than appendectomies, such as a gastric resection, hysterectomies, et cetera, occurred in nine cases. In thirty-five cases, or 14 per cent of the total number of cases, a choledochostomy was performed in addition to the cholecystectomy. The indications for the cholecystectomies were acute or chronic cholecystitis with or without cholelithiasis and carcinoma of the gall bladder. Cholelithiasis was encountered in 230 of the 250 cases; a non-functioning gall bladder with symptoms occurred in nineteen cases; and carcinoma of the gall bladder was the indication for one cholecystectomy.

Acute and chronic cholecystitis with or without cholelithiasis is of course principally a disease of middle age; the average age of the patients in this series was forty-six years. The largest number of cholecystectomies, seventy-six cases or 30.4 per cent, was performed on patients in the sixth decade. Patients in the fifth and fourth decades closely followed the sixth decade in the number of cholecystectomies, being respectively sixty-three and fifty-four cases. At the two extreme ends of life, the number of patients who underwent surgical treatment for cholecystitis gradually decreased, as shown in Table I. The youngest patient in this series was nineteen years of age and the oldest seventy-four.

As we know, gall-bladder diseases definitely predominate in the female. 206 of the 250 cholecystectomies, or 82.4 per cent, were performed on females as compared to only forty-four cases, or 17.6 per cent on males. The ratio of females to males in this consecutive series of cases was approximately 5 to 1.

The average postoperative hospital stay for the 250 cholecystectomies was 14.8 days. The length of the postoperative hospitalization was, of course, reduced in those who had no complications, the average being 13.5 days. It is surprising to observe that in the cases in which complications followed operation the average postoperative hospital period more than doubled that of those without complications. The average postoperative hospitalization in this undesirable group was 28.3 days. The longest postoperative period was sixty-nine days, and this occurred in a patient who developed pneumonia and subsequent lung necrosis following a pulmonary embolism. Subdiaphragmatic abscess prolonged the postoperative stay to sixty-five days in another patient, although both of the above patients eventually recovered.

TABLE II. POSTOPERATIVE HOSPITAL STAY —DAYS

Non-complicated cholecystectomies	13.5
Cholecystectomies with complications	28.3
Average for the 250 cases	14.8

TABLE III

Type of anesthesia	No. of Cases
Spinal	64
Nitrous oxide and ether	27
Ethylene and ether	29
Cyclopropane	29
Cyclopropane and sod. pentothal	24
Spinal and local	15
Local and ethylene	8
Local and cyclopropane	7
Local and ethylene and ether	7
Spinal and cyclopropane	6
Ethylene	6
Cyclopropane and ethylene	4
Spinal and nitrous oxide	4
Local	3
Spinal and ethylene	2
Local, nitrous oxide and ether	2
Local and sod. Pentothal	2
Various combinations of two or more anesthetic agents	11
Total	250

A variety of twenty-eight anesthetic agents and combinations of agents was employed in this series of 250 consecutive cholecystectomies. Spinal anesthesia alone and in combination with other agents was used in ninety-six patients, or in 38.5 per cent of the total number of operations. Local anesthesia alone or used with other anesthetic agents was employed in forty-nine of the cholecystectomies, or in approximately 20 per cent of the total number of cases in this series. The popularity of ether anesthesia, either in combination with ethylene or nitrous oxide, which was used in many of the early cholecystectomies in this series has been largely replaced in recent cases by the use of sodium pentothal and cyclopropane combined with curare.

There was a total of twenty-nine complications or an incidence of 11.6 per cent in this series of 250 consecutive cholecystectomies. The percentage of serious complications was relatively low since wound infections, seven cases, accounted for 24.2 per cent of the total number of complications. Ten out of the twenty-nine com-

TABLE IV. COMPLICATIONS FOLLOWING 250 CONSECUTIVE CHOLECYSTECTOMIES

Complications	No.	Recovered	Died
1. Wound infection	7	7	0
2. Pneumonia	4	3	1
3. Pulmonary embolism	2	2	0
4. Subdiaphragmatic abscess	2	2	0
5. Paralytic ileus	2	1	1
6. Pleurisy	2	2	0
7. Wound disruption (not evisceration)	2	2	0
8. Biliary fistula	1	1	0
9. Ligation of common duct	1	1	0
10. Post-op. common duct obstruction	1	1	0
11. Hydrothorax	1	1	0
12. Atelectasis	1	1	0
13. Spinal headache	1	1	0
14. Septicemia	1	0	1
15. Coronary thrombosis	1	0	1
Totals	29	25	4

TABLE V

Cholecystectomy	No. of Cases	No. of Complications	Per cent Complication
Cholecystectomy	113	11	9.7
Cholecystectomy and appendectomy	93	12	12.9
Cholecystectomy and associated surgery	9	2	22.2
Cholecystectomy and choledochostomy	35	4	11.4
Totals	250	29	11.6

plications or approximately 35 per cent, were pulmonary in nature, four of which were pneumonias. The incidence of pulmonary embolism in this series was unusually low; only two cases were recorded and both were non-fatal. One of the patients had an uneventful fourteen-day postoperative course following pulmonary infarct. The second case of pulmonary embolism which occurred in a seventy-two-year-old male was followed by more serious sequelae as compared to the above cases, namely, atelectasis and pneumonia and later lung necrosis. When the latter patient was discharged on the sixty-ninth postoperative day, marked thickening of the pleura with considerable fibroid infiltration persisted in the region of the pulmonary infarction.

Two cases of paralytic ileus were listed as complications, one of which was fatal on the sixth postoperative day. The second case of severe paralytic ileus was successfully treated with prostigmine, acetyl choline, nasal syphonage and a Miller-Abbott tube.

There were two cases of subdiaphragmatic abscesses in this series of 250 consecutive cholecystectomies. In one of the cases, needle aspiration of the subdiaphragmatic region yielded only 8 c.c. of purulent material. The abscess gradually disappeared without surgical intervention, but the postoperative hospitalization was prolonged to sixty-five days. The septic temperature in the second case of subdiaphragmatic abscess promptly and dramatically returned to normal following surgical drainage, and the patient was discharged from the hospital ten days later.

The temperature suddenly became elevated and a profuse biliary drainage was observed in the twenty-seventh postoperative day in a patient who also had a gastric resection performed at the same time as the cholecystectomy. The drainage from the biliary fistual gradually decreased and stopped entirely after twenty-four days, but the patient's total postoperative hospital stay was fifty-one days.

A common duct obstruction occurred in one patient following a cholecystectomy and choledochostomy. During the operation, the common duct was opened and a probe was inserted into the duodenum. The injection of saline through the T-tube readily passed into the duodenum. Postoperatively, the patient continued to be jaundiced, and cholangiograms revealed a complete obstruction at the distal end of the common duct. At the second operation, fifteen days later, the attempt at passing a probe through the common duct into the duodenum was unsuccessful, thus necessitating opening the duodenum and removing an impacted stone in the ampulla of Vater.

The dreaded complication, ligation of the common duct, occurred only once in this series of 250 consecutive cholecystectomies. The patient developed clay-colored stools and jaundice following surgery and a second operation fifteen days later revealed that the common duct had been previously ligated. The sutures were removed from the common duct, and a Vitallium tube was anchored into the ends of the common duct, thus restoring the continuity of the duct. The patient did remarkably well and was discharged eleven days following the insertion of the Vitallium tube.

As was mentioned previously, the incidence of complications in the 250 cholecystectomies was 11.6 per cent. The incidence of complications was, however, somewhat higher in the cases in which appendectomies, other abdominal operations and choledochostomies were performed in addition to the cholecystectomy.

Only four deaths occurred in this series of 250 consecutive cholecystectomies, giving a remarkably low operative mortality of only 1.60 per cent. A brief summary of the deaths will be given:

Case 1.—A forty-two-year-old woman was operated on July 14, 1943, for an abscess with draining sinus in the right hypochondrium. Stereoscopic films made after the injection of an opaque media into the sinus revealed a sinus tract in the right side of the abdomen communicating with a large superficial pocket starting at the level just below the liver and extending deeper and down to a level just above the crest of the right ileum. The patient was operated upon, and after the injection of methylene blue the entire sinus tract was excised. There was no evidence of the sinus tract penetrating the fascia and communicating with the abdominal cavity. The patient continued to run a postoperative septic fever, and on August 4, 1943, an abdominal exploratory operation was performed. A perforated gall bladder containing stones was found which was removed, but the patient died from septicemia on the thirtieth postoperative day.

TABLE VI. COMPLICATIONS & MORTALITY PER SURGEON

Surgeons	No. of cases	Complications	Per cent Complications	Deaths	Per cent Mortality
A	60	Wound infection (2) Pneumonia (3) Paralytic ileus (1) Hydrothorax (1) Spinal headache (1) Subdiaphragmatic abscess (1) Coronary thrombosis (1) Total 10	16.7	Pneumonia (1) Coronary thrombosis (1)	3.33%
B	42	Wound infection (3) Atelectasis (1) Wound disruption (1) Pulmonary embolism (1) Total 6	14.3		0
C	40	Wound infection (1) Wound disruption (1) Total 2	5.0		0
D	22	Pleurisy (2) Biliary fistula (1) Total 3	13.6		0
E	13	Ligation C. D. (1) Paralytic ileus (1) Pneumonia (1) Total 3	23.1	Paralytic ileus (1)	7.69
F	12	Pul. embolism (1) Septicemia (1)	16.7	Septicemia (1)	8.33
G	9	Common duct obstruction (1) (stone)	11.1		0
H	7	Subdiaphragmatic abscess (1)	14.3		0
I	7	0	0		0
J	7	0	0		0
K	6	0	0		0
14 surgeons (3 or less each.)	25	Wound infection (1)	4.0		0
Totals	250	29	11.6	4	1.60

Case 2.—A sixty-two-year-old woman was operated on January 15, 1944, for chronic cholecystitis with cholelithiasis. A cholecystectomy was performed, and the patient's condition on leaving the operating room was described as good. Eight hours following surgery the patient suddenly experienced pain in her chest, dyspnea and became extremely cyanotic and expired a few minutes later. Autopsy confirmed the cause of death as being due to coronary thrombosis with myocardial infarction.

Case 3.—A cholecystectomy was performed on December 3, 1943, in a sixty-year-old female for obstructive jaundice with a pathological gall bladder. At operation, the gall bladder was found to be distended with numerous stones, and three large calculi were removed from the common duct. The patient developed a severe abdominal distension and expired on the sixth day from a postoperative paralytic ileus.

Case 4.—A fifty-two-year-old woman was operated on September 18, 1942, for chronic cholecystitis with cholelithiasis. The temperature, pulse and respirations became suddenly elevated on the second day following the cholecystectomy. A considerable amount of thick, muco-purulent secretion was aspirated from the trachea and the right and left bronchi, but the patient expired on the second postoperative day from atelectasis and bronchopneumonia.

As was mentioned previously, the 250 consecutive cholecystectomies were performed by a group of twenty-five doctors.

The largest number of operations performed by one surgeon was on sixty patients. There was a total of twenty-five cholecystectomies performed by fourteen different surgeons, each of whom did a maximum of three or less cases. It is surprising to observe that the incidence of complications was lower in the "occasional operator" group as compared to the surgeons who had performed the larger number of cholecystectomies. The surgeon with the sixty cases had ten complications, or an incidence of 16.7 per cent, whereas there was only one complication, an incidence of 4 per cent, and that merely being a skin infection, in the total twenty-five cholecystectomies which were performed by the fourteen different surgeons. The fact that the mortality and incidence of complications was lower in the "occasional operator" group as compared with surgeons who performed the larger number of cholecystectomies was no doubt due to more careful avoidance of bad risk cases as well as other precautions on the part of both patient and physician. In this connection, the official granting of "operating room privileges" by the Board of Directors of Asbury Hospital, first instituted in Minneapolis in May, 1944, may have some bearing on the low incidence of mortality and complications as shown in this report.

Summary

An analysis was made of 250 consecutive cholecystectomies which were performed at Asbury Hospital by a group of twenty-five doctors. Nine of the group of twenty-five doctors are members of the Minneapolis Surgical Society, and they performed 78.4 per cent of the total cases. All operations of the gall bladder and duct system in which a cholecystectomy was performed are included in this analysis.

The average age of the patient in this series was forty-six years.

Women who underwent a cholecystectomy predominated over men by a ratio of 5 to 1.

The average postoperative hospital stay for non-complicated cholecystectomies was 13.5 days and 28.3 days for the cases in which complications occurred.

Sodium pentothal intravenously and cyclopropane in combination with curare is becoming the anesthetic of choice, replacing the once enjoyed popularity of ether anesthesia.

A total of twenty-five complications occurred, or an incidence of 11.6 per cent, with skin infections being responsible for 24.2 per cent of the total number of complications.

The operative mortality for the 250 consecutive cholecystectomies was 1.60 per cent. The reasons for the lower incidence of complication and deaths in the "occasional operator" group were given.

Discussion

Dr. Felipe Torres: What type of incisions and suture material are used? Also, how early do the patients get up?

Dr. Johann: The majority of the surgeons preferred and used the transverse incision which permits adequate exposure and earlier postoperative ambulation. In regard to suture material, the number of advocates of non-absorbable and absorbable sutures were about equal. The majority of the non-absorbable suture enthusiasts preferred silk to cotton. The time of postoperative ambulation varied from the second to the twelfth day depending on the surgeon, but there was a definite tendency in the past year to get patients out of bed sooner.

Dr. Douglas Adkins: What do you think about the hospital records as to the complications that were not recorded?

Dr. Johann: I believe that the hospital records were indeed complete and reliable.

BENIGN STRICTURES OF THE EXTRAHEPATIC BILE DUCTS AT THE UNIVERSITY OF MINNESOTA HOSPITALS

(Inaugural Thesis)

JOHN R. PAINE, M.D.
Minneapolis, Minnesota

Causes of Strictures

Benign strictures of the extrahepatic bile ducts are due to operative trauma practically without exception. In a series of ninety-eight such cases reported in 1940 by Walters and Lewis only one case could definitely be stated as not being due to mechanical injury at the time of operation. In the thirty-three cases seen at the University of Minnesota Hospitals during the past seven years some operation on either the gall bladder or common duct has preceded the formation of the stricture in every instance. Trauma incident to a simple cholecystectomy is by all odds the most frequent circumstance producing such strictures. Choledochostomy with or without cholecystectomy is responsible in our experience for only 15 to 20 per cent of the strictures.

Too often does the surgeon hear a perplexed and often worried colleague say, "I can't understand how I could have injured the duct. It was such an *easy* cholecystectomy." In such a remark lies the clue to much of the difficulty. The operation seemed to be so easy that it could be and was done in a hurried manner without adequate dissection of the structures in the porta hepatis.

There are three fundamental reasons why the extrahepatic bile ducts may be injured during a cholecystectomy.

The first of these is the frequent occurrence of anatomic anomalies in the bile ducts and the cystic artery. That these anomalies occur is well known and the surgeon should always be on the lookout for them. The exact relationship between the cystic and common hepatic ducts should always be demonstrated before the former is clamped.

The second reason is unexpected bleeding from the cystic artery or an anomalous vessel. Often in the excitement of such moments one or more hurried and inaccurate attempts are made with a hemostat to secure the bleeding point. Not infrequently some part of the duct is included and crushed in the jaws of the clamp. It should not be forgotten that gentle compression of the porta hepatis between the forefinger, in the Foramen of Winslow, and the thumb, on the anterior surface of the gastrohepatic ligament, will safely control the bleeding until the severed vessel can be adequately exposed and accurately clamped.

The third reason is the distortion produced in the common duct by traction on the ampulla of the gall bladder transmitted through the cystic duct. Traction thus produced frequently tents up the common duct at its point of union with the cystic duct and obscures this point of union so that the cystic duct clamp if placed in a hurried fashion may include all or a portion of the circumference of the common duct.

To safeguard against these injuries all of the surgical residents at the University Hospitals are taught that no cystic duct is to be clamped unless dissection has been complete enough to visualize the common duct both above and below the junction of the cystic duct, and then with only a minimal amount of traction on the ampulla of the gall bladder. They are further instructed that the cystic artery should preferably be isolated and clamped separately from the cystic duct before ligation. After saying this, it is somewhat paradoxical to add that two of the thirty-three strictures seen at our clinic in the past seven years have followed trauma produced by our own residents. I prefer to believe that the above rules are good ones but that their application has not been entirely perfect.

TABLE I. OPERATIVE PROCEDURES EMPLOYED
1938-1946

		1st Op.	2nd Op.	3rd Op.	4th Op.
Sphincter Oddi Preserved	1. End-to-end anastomosis with T-tube	16	3	2	
	2. End-to-end anastomosis with Lucite tube	1	2		
	3. End-to-end anastomosis with vitallium tube	1			
	4. End-to-end anastomosis with catheter		2		
	5. Dilatation with T-tube	1	2		
	6. Dilatation with Lucite tube	2			
	7. Incision with T-tube	2			
	8. Removal Lucite tube		2	1	
	9. Exploration only	1			
Sphincter Oddi Sacrificed	1. External biliary fistula	4	2	1	1
	2. Choledochogastrostomy	1			
	3. Choledochoduodenostomy	1	1		
	4. Choledochojejunostomy	3	1		
	Total	33	15	4	1

Recognition of Strictures

If it be a surgical sin to traumatize the common duct during cholecystectomy it is an even greater sin to traumatize the duct and not to recognize at the time that injury has been done. All reported series indicate that the best results follow those repairs of the common duct which are made at the time of the injury before biliary obstruction and its sequellae have appeared. In our experience the details of the patient's history have usually not been well enough known to say definitely whether or not an immediate repair has been attempted. It seems highly probable, however, that in the majority of cases an immediate repair has not been made. On the other hand, a stricture has usually first been suspected in the postoperative period after an interval of time varying from a few days to many months. The patient at that time usually presents a clinical picture which can be placed in one of the three following categories:

1. *Instances in which a defect has been made in the common duct:* In this situation bile begins to drain from the abdominal wound in the immediate postoperative period and continues to do so for several weeks. The amount of drainage becomes less gradually and simultaneously jaundice develops. For a time the drainage may be intermittent and the degree of jaundice variable. Eventually all drainage ceases and the jaundice becomes persistent and severe. In time cholangitis usually appears.

2. *Instances in which the duct has been traumatized but not opened:* Under these circumstances the postoperative convalescence appears to be normal. Several months later and frequently unassociated with pain, a progressively increasing jaundice appears. At any time during this period cholangitis may appear.

3. *Instances in which the common duct has been occluded by ligature:* If the occlusion has been complete a progressive jaundice develops immediately after the operation. Pain is frequently minimal. If the occlusion has been partial, the course is similar to that in those cases where the duct has been traumatized but not opened or constricted. Cholangitis may develop. If, by chance, the occluding ligature should loosen after a time, the jaundice may improve following the discharge of a large amount of bile into the abdomen or through the wound to the outside. In this case the subsequent course will be that indicated for those cases in which a defect has been made in the common duct.

The Problem of Surgical Repair

Although everyone agrees that patients with benign strictures require some type of surgical procedure to improve or cure their difficulties no one operation has yet been devised which will satisfactorily correct the condition in a sufficiently large percentage of cases to enjoy acceptance and approval by a majority of surgeons. There would appear to be two reasons for this: (1) the inability of one operation to deal effectively with all the pathological variations found at operation; and (2) doubt as to the advisability of sacrificing the function of the sphincter of Oddi.

The principal types of operations that have been employed in the past for the correction of common duct strictures are as follows:

1. *Choledochojejunostomy or hepaticojejunostomy:* Variations of this operation have been described during the past year by Dr. Arthur Allen of Boston and Dr. Warren Cole of Chicago. The theory involved is the utilization of a sufficient length of jejunum through which the intestinal contents do not pass from the anastomosis to the remaining proximal portion of the bile ducts. In this manner it is hoped to prevent cholangitis. Time will tell whether or not this operation, which can be applied to almost all cases of stricture, is a satisfactory solution to the problem.

2. *Choledochoduodenostomy—or gastrostomy of enterostomy*: This operation was first performed by Riedel in 1888 but Sprengel in 1891 was the first to have a patient survive. Most writers in the past have recommended this operation as the one of choice.

3. *End-to-end anastomosis of the common duct*: This operation was first performed by Doyen. On theoretical grounds it would appear to be the most physiological of all the procedures but the difficulty in locating the distal portion of the duct and the most infrequent recurrence of the stricture at the site of the anastomosis has led many operators to choose many other types of operation. The anastomosis has usually been constructed over a T-tube or catheter.

4. *Reconstruction of the common duct by a rubber tube*: This procedure was performed first by Jenckel in 1905. It is known also under the names of Wilms-Sullivan operation or the McArthur operation. In 1912 Sullivan reported the successful repair of segmental defects in the common ducts of dogs by the construction of a sleeve of omentum and peritoneum around an indwelling catheter. In 1923, McArthur recommended the insertion of a rubber tube to bridge the gap without attempting to reconstruct the duct. Apparently a few brilliant results have been obtained by this method but the recurrence of a stricture is so frequent that it should be avoided when possible.

5. *Formation of an external biliary fistula*: This procedure is usually made only as a last resort. Attempts to implant the fistula into the gastro-intestinal tract have been failures in almost every instance.

6. *Incision or dilatation of the stricture*: In carefully chosen cases these operations can be expected to give fairly satisfactory results if a T-tube or catheter be inserted for a time.

In any critical analysis of operations for the relief of strictures of the common duct, considerable thought should be given to whether or not the function of the sphincter of Oddi should be sacrificed. Fundamentally, the answer to this question revolves around the cause of cholangitis and in the writer's opinion, this has not been definitely settled. Certain it is that many cases with biliary obstruction with functioning sphincter have developed cholangitis in the absence of any fistula between the bile ducts and the gastro-intestinal tract. On this type of evidence many people believe that obstruction is the most important cause of cholangitis. On the other hand, some cases with biliary obstruction continue for an indefinite time without developing any of the signs or symptoms of cholangitis.

There is considerable indirect evidence that prevention of the regurgitation of the contents of the gastro-intestinal tract into the extra-hepatic bile ducts is an important factor in the prevention of cholangitis. Horsley, Lehmans, and Gatewood and Poppens have reported large series of dogs in which the gall bladder has been anastomosed to various parts of the gastro-intestinal tract. Cholangitis was found to be consistently present after all these procedures and many surgeons belive that like results occur in the human being following any operative procedure which does not preserve the function of the sphincter of Oddi.

The popularity, which choledochoduodenostomy or enterostomy have enjoyed in the past, would seem to have been due to the relative facility of performing this type of operation in the average case of stricture, as compared to the end-to-end anastomosis of the duct after the stricture has been excised. In deeply jaundiced, poor-risk patients such a consideration was important. The pre-operative preparation of such patients with Vitamin K, the use of cyclopropane anesthesia and blood transfusions, however, now enable time-consuming operations to be carried out in jaundiced patients with relative safety. In addition it has been stated that end-to-end anastomosis is frequently impossible because (1) the duct distal to the stricture cannot be located and (2) the length of the stricture frequently prevents an anastomosis from being made without undue tension on the suture line. We do not believe that these objections to end-to-end anastomosis are valid in the majority of cases. Many cases of stricture of the extra-hepatic bile ducts can be repaired by this operation if certain points in operative technique are observed as follows:

1. The distal portion of the common duct may be located by either opening the duodenum and probing in a retrograde direction through the ampulla of Vater or by cutting transversely just above the first portion of the duodenum all those structures lying to the right of the hepatic artery and anterior to the portal vein.

2. Incision of the peritoneum at its reflexion from the duodenum to the posterior abdominal wall will permit the duodenum and head of the pancreas to be freed so that they may be rotated about the superior mesenteric vessels in a clockwise direction. In most instances this maneuver enables an end-to-end anastomosis to be constructed without undue tension on the suture line.

Report of Cases, 1938-1946

That these ideas can be successfully applied in practice has been demonstrated by the experience at the University of Minnesota Hospitals during the past eight years. During this period there have been thirty-three patients with benign strictures of the extrahepatic bile ducts operated upon by six different surgeons. In one patient the dilated proximal portion of the duct system could not be found. This individual died seven days after operation in coma with unrelieved jaundice. A second patient died a few days after the sixth operation performed for the relief of a stricture and its complications. The third patient died approximately one year after an apparent cure of the stricture by an end-to-end anastomosis. The cause of death was the rupture of an aneurysm of the hepatic artery following injury of the artery with a needle at the time of operation.

Except for those patients operated upon during the greater part of 1945, when it was desired to try the Allen type of operation (choledochojejunostomy) a concerted effort has been made to remove the stricture without sacrificing the sphincter of Oddi. Those patients in whom the Allen type of operation has been used number four. Fifteen patients have had to be operated upon more than once and one patient had four operations. At the initial operation, in the thirty-two patients in whom the dilated proximal portion of the duct could be found, the sphincter of Oddi was preserved in twenty-three.

Follow-up interviews or letters have been obtained in twenty-seven of the thirty patients thought to be still alive. Eighteen of these patients still have functioning sphincters of Oddi and in nine patients the sphincter has been sacrificed. Twenty-two of these twenty-seven patients are in good health, either entirely well or with such mild and indefinite symptoms that they are in no way incapacitated. Four patients have a moderate to severe cholangitis. Three of these four patients are among those patients who have had the function of their sphincter of Oddi sacrificed. It must be remembered, however, that a considerable period of time must pass before the end result of an operation for a stricture of the bile ducts can be correctly evaluated. Information is available concerning only fifteen patients whose last operation has been two or more years ago. Of these patients twelve have had their sphincters preserved and three have had their sphincters sacrificed. Eleven of the former are in good health and two of the latter are in good health.

TABLE II. RESULTS OF TREATMENT

Final Operative Procedure	Deaths	Well	Indefinite Symptoms	Jaundice or Cholongitis	
				Moderate	Severe
1. End-to-end anastomosis with T-tube	1	6 (6)	2 (2)		1 (1)
2. End-to-end anastomosis with Lucite tube		1	1		
3. End-to-end anastomosis with catheter		1			
4. Dilatation with T-tube		1	1 (1)		
5. Incision with T-tube		2 (2)			
6. Exploration	1				
7. Removal of Lucite tube		1	1		
1. External biliary fistula	1	3 (1)		2 (1)	
2. Choledochoduodenostomy		1 (1)			
3. Choledochojejunostomy		1		1	1
Total	3	17 (10)	5 (3)	3 (1)	2 (1)

(Results not known on three patients.)

Discussion

One question of great concern to the surgeon who undertakes to operate upon any patient with a stricture of the bile ducts is the correct management of those patients in whom tubes of some sort are used to reconstruct the duct or to form a biliary-intestinal fistula. For this purpose we ourselves have used almost without exception rubber T-tubes. Dennis has experimented with tubes of lucite to which he has attached a rubber stem. Dr. Herman Pearse of Rochester, New York, has recommended the use of a straight flanged tube of vitallium. It was formerly our plan to have the patient carry a rubber T-tube for approximately a year if the bile duct had been reconstructed over it either by an end-to-end anastomosis or by some more minor plastic procedure or after a dilatation of the duct. It was thought that all tendency of the scar in the duct to contract at the operative site would have ceased by that time. It was found, however, that, although isolated cases occur in which a rubber tube may remain in the bile stream indefinitely with no encrustation occurring about it, in the majority of cases after a few months, cholesterol and bile pigments are deposited, which may completely occlude the lumen of the tube. In an attempt to avoid this in the future, it is planned to remove all such tubes after six months. Dennis has employed tubes made of lucite, a synthetic plastic which produces practically no irritation of the body tissues in an effort to avoid this difficulty. The results, however, have been only partially successful. Of five tubes inserted three have had to be removed because of obstruction due to encrustations. Our experience with a vitallium tube has included only one patient in whom the tube had to be removed after four years because of recurrence of the bile duct obstruction. At the time of removal, it was found to be encrusted and completely occluded with the same type of deposit as that seen commonly on rubber tubes.

One further point should be mentioned. If a T-tube be used in the repair of a common duct stricture, the stem of the tube must not be brought out through the wall of the common duct at the site of the stricture but rather as far removed from the site of the stricture as is conveniently possible. If this is not done, the trauma to the duct wall caused by the withdrawal of the tube greatly predisposes to the recurrence of the stricture. The author feels sure that several of the recurrences of stricture in the earlier cases of this series were due to this factor before its importance was recognized.

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Discussion

Dr. Ivar Sivertsen: There is one item that has not been mentioned, to wit—when are we supposed to remove the T-tube after doing a choledochostomy?

Some time ago, a case in point, where a T-tube was removed on the tenth or eleventh day postoperatively, we apparently had the complication of a kinking of the duct, by pulling it toward the abdominal wall so that the bile did not go down through the duct itself but came through the abdominal wall, and no evidence of bile was showing in the stool. This patient became gradually worse and several of my confreres saw the patient in consultation, and notwithstanding that most of them felt that it was not necessary to go inside and free the duct from the abdominal wall, the patient went from bad to worse. Consequently he was taken to the operating room and the duct was freed from adhesions around the abdominal wall. After this procedure the patient improved steadily, and I am sure that if he had not been operated upon he would have died. Therefore, I am wondering when the T-tube should be removed.

Dr. James Hayes: I enjoyed Dr. Paine's discussion. Dr. Paine mentioned the vitallium tube brought out by Pearse in 1941.

I have some slides of cases in which I used this tube. About the time Pearse published his work with the vitallium tube, I had an interesting case that was giving me much concern.

A school teacher in this city had already been operated upon twice before I saw her. She had been jaundiced for some time. On exploration I could find only a remnant of the common duct proximally and distally. I put in a McArthur tube and closed the wound with a drain down to the site of the repaired duct. The patient did well for a few weeks but then became jaundiced and showed no bile in the stool. December, 1941, I inserted a vitallium tube in place of the McArthur tube. After a stormy convalescence she recovered and has been well since. I saw her this past week. She has been teaching steadily since and has no complaints whatever now.

A short time later I inserted one in a man who had been operated upon twice previously. At his previous operation a T-tube had been inserted and left for two or three months. He was well for about one year when he became jaundiced again. The mid-portion of the common duct was atrophied and completely shut off. I resected this mid-portion and inserted a vitallium tube. He is now running a laundry in St. Paul and has been well since.

I have a third one who was well when I last heard from him but at present I have lost track of him.

A fourth patient died of cancer of the liver in the University Hospital about one year after I had inserted a vitallium tube.

A fifth patient had been operated twice by an osteopath and once by a surgeon. For two years he had been draining bile externally. Exploration showed a marked degree of atrophy of the liver. Only a thin watery type of bile could be obtained from the hepatic duct. The patient died of hepatic deficiency following operation.

As Dr. Pearse said in his discussion the vitallium tube may be used in these cases after other methods of common duct repair have failed. Only time will tell how this method of repair compares with other methods.

Dr. N. K. Jensen: What is the incidence of stricture formation at the point of the insertion of the T-tube? How often does stricture occur?

Dr. John R. Paine: As far as I know, in none of these cases have we had strictures. Most of them have been followed. We are always careful to cut out the T-tube in such a way that when you withdraw the tube the ends fold up together and come out easily.

Dr. Edwin Benjamin: In these cases of strictures where the patients had been obstructed for quite a long time, was there resultant liver damage? Is there any time limit in which one would expect there to be permament liver damage, or does the liver function again normally?

Dr. John R. Paine: We have not in this series studied the degree of liver damage. There is, no doubt, information on the charts. Of course, we have had the benefit of Doctor Watson's help, and most of these patients have come through his service. Most of them do show liver damage. Now it is my impression that the amount is rather variable, and I do not say it is in direct ratio with the cholangeitis. How soon can it come on? That is a variable thing too.

Dr. Clarence Dennis: I would like to say this with regard to the use of T-tubes as splints in the repair of common duct strictures. When the anastomosis is made at the site of the vertical limb of the T-tube, it has been our experience that enough injury to the duct occurs upon withdrawal of the T-tube to lead in many cases to reformation of stricture at that site. A much more satisfactory arrangement is the one which Doctor Allen mentioned when he talked here a year ago, namely, the repair of the duct over a catheter which is brought out through the ampulla of Vater across the duodenum and out the anterior wall of the duodenum as a Wetzel type of catheter enterostomy. This tube may be removed in two or three weeks and in those patients in whom it has been employed, we seem thus far to have had very satisfactory results.

Dr. John R. Paine: It has been done only in two or three cases within the past year. I wouldn't be prepared

(Continued on Page 844)

◆ Reports and Announcements ◆

MEDICAL BROADCAST FOR AUGUST

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

August		
1— 1:15	WCCO	Urticaria
3—11:30	KUOM-KROC-KFAM	Medicine in the News
6— 1:15	WCCO	The Hospital as an Emergency Care Center
8— 1:15	WCCO	Asthma
10—11:30	KUOM-KROC-KFAM	Medicine in the News
13— 1:15	WCCO	Duties of the Public Health Nurse
15— 1:15	WCCO	Seasonal Pollinosis
17—11:30	KUOM-KROC-KFAM	Medicine in the News
20— 1:15	WCCO	The Hospital—a Diagnostic Center
22— 1:15	WCCO	Gastro-intestinal Allergy
24—11:30	KUOM-KROC-KFAM	Medicine in the News
27— 1:15	WCCO	The Human Side of Nursing
29— 1:15	WCCO	Minnesota's Dental Program
31—11:30	KUOM-KROC-KFAM	Medicine in the News

AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians announces its Twenty-eight Annual Session to be held in Chicago, Illinois, April 28-May 2, 1947.

Dr. David P. Barr, New York, is President of the College, and will be in charge of the program of General Sessions and Lectures. Dr. LeRoy H. Sloan, Chicago, has been appointed General Chairman, and will be in charge of the program of Hospital Clinics and Panels, as well as local arrangements, entertainment, et cetera. Mr. Edward R. Loveland, Executive Secretary of the College, 4200 Pine Street, Philadelphia 4, will have charge of the general management of the session and the technical exhibits.

Other medical societies are urged to note these dates in order that conflicts in meeting dates may be avoided for mutual benefit.

NATIONAL ARTHRITIS RESEARCH FOUNDATION

A National Arthritis Research Foundation has been initiated by the officers and trustees of the Levi Memorial Hospital at Hot Springs National Park, Arkansas, and a campaign to raise $2,500,000 to finance the project is now under way. Facilities of the hospital, which has specialized in the care of arthritics since 1914, will be absorbed by the Foundation which has been endorsed by the officers of the American Medical Association and numerous eminent scientists.

Arthritis is a major cause of disability, and research in prevention and treatment is greatly needed. The Foundation deserves the support of both the medical profession and the laity.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association will be held Monday, September 9, 1946, in Faribault, with scientific sessions in Shattuck Military Academy Auditorium.

Registration will be from 8:00 to 9:00 a.m.

Entertainment will be provided for the ladies.

The scientific program will begin at 9:00 a.m., and will consist of a morning and afternoon session. There will be a noon-day luncheon, and a banquet in the evening.

Scientific Program

Internal Derangements of the Knee—P. R. Lipscomb, M.D., Rochester

Intolerance to Common Drugs in Asthma—J. L. Morgan, M.D. and L. E. Prickman, M.D., Rochester

Recent Advances in Dermatology—L. A. Brunsting, M.D., Rochester

Experience with Folic Acid in the Treatment of Pernicious Anemia—C. H. Watkins, M.D. and Byron E. Hall, M.D., Rochester

The Clinical Use of Streptomycin—W. E. Herrell, M.D., Rochester

Symptomatology of Hernia of the Diaphragmatic Hiatus —J. B. Carey, M.D., Minneapolis

Clinical-Pathological Conference—J. W. Kernohan, M.D., Rochester

Review and Analysis of 152 Cases of Poliomyelitis Admitted during 1944 at Minneapolis General Hospital—J. C. Michael, M.D. and S. S. Ramsdell, M.D., Minneapolis

Gastric Neurectomy (Vagotomy) in the Treatment of Duodenal Ulcer—W. Walters, M.D., Rochester

The Problem of Gastric Cancer—O. H. Wangensteen, M.D., Minneapolis.

INTERNATIONAL COLLEGE OF SURGEONS

An international surgical assembly sponsored by the United States Chapter, International College of Surgeons, will be held in Detroit, Michigan, October 21, 22, 23, 1946. An intensive clinical and didactic program by world authorities will be presented. (See page 831).

All medical men and women in good standing are cordially invited. Program and information on the Assembly and the primary qualifications for Fellowship in I.C. of S. are available by writing L. J. Gariepy, M.D., Secretary, 16401 Grand River, Detroit, 27, Michigan.

NATIONAL CONFERENCE ON CO-OPERATIVE HEALTH PLANS

The National Conference on Co-operative Health Plans will be held at Two Harbors, Minnesota, August 15 to 18. About 150 delegates are expected to attend. Dr. Dean Clark, director of a pre-payment medical plan for Greater New York, formerly a member of the staff

(Continued on Page 830)

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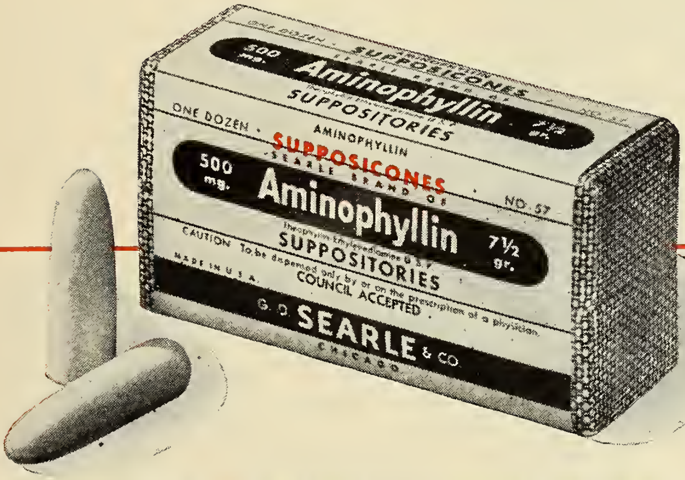
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CO-OPERATIVE HEALTH PLANS

(Continued from Page 828)

of the U. S. Public Health Service, and a recognized authority on pre-payment plans, will speak on "An Evaluation of Voluntary Health Plans." Dr. Kingsley Roberts, well known for his work in medical economics, will discuss "The Place of Group Practice and Preventive Care in Co-operative Health Plans."

Others scheduled to make addresses are Dr. Michael Shadid, of the Community Hospital, Elk City, Oklahoma; Henry Becker, president of the Group Health Association, of Washington, D. C., and Winslow Carlton, of the Group Health Co-operative of New York City.

GASTRO-ENTEROLOGY AWARD

The National Gastro-enterological Association has announced the winner of its 1946 Cash Prize Award Contest for the best unpublished manuscript on Gastro-enterology or an allied subject.

The winning contestant was Capt. Irving B. Brick, MC, AUS, whose paper on "Radiation Effects on the Human Stomach: A Preliminary Report" was selected by the judges.

Certificates of Merit were also awarded to Dr. Frank L. Apperly, Richmond, Va.; Dr. William Nimeh, Mexico City, Mexico, and Dr. Juan Nasio, Rosario, Argentina.

The winning paper, as well as those receiving Certificates of Merit, will be published in the *Review of Gastroenterology,* commencing with the September-October 1946 issue.

ASSOCIATION OF MILITARY SURGEONS

Reservations already received for the convention of the Association of Military Surgeons of the United States to be held in Detroit, October 9 to 11, inclusive, indicate that attendance this year will be unusually heavy. Therefore, all members planning to take part in the convention are urged to send in their reservations immediately so as to be sure of obtaining proper hotel accommodations. Dr. Carleton Fox, General Convention Chairman, announces that Lt. General Walton H. Walker, commanding general of the Fifth Army has accepted an invitation to serve as honorary chairman. Other members of the honorary committee are General Bliss, U. S. Army; Captain Cole, U. S. Navy; Dr. Williams, U. S. Public Health Service, and General Hawley, Veterans Administration, who will serve as vice chairman.

The convention will formally open Wednesday morning, October 9 at 10:00 a.m., in the ballroom of the Book-Cadillac Hotel. Addresses of welcome will be delivered by Edward J. Jeffries, mayor of the city of Detroit; Dr. W. B. Harm, president, Wayne County Medical Society; Dr. Louis Braun, president, Detroit District Dental Society, and Dr. James E. Patterson, president, Southeastern Michigan Veterinarian Association. Highlighting the initial session will be the presidential address delivered by Col. Ervin Abel, president,

(Continued on Page 832)

INTERNATIONAL SURGICAL ASSEMBLY

UNITED STATES CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS

MASONIC TEMPLE, DETROIT, OCTOBER 21, 22, 23, 1946

President, Herbert Acuff, Knoxville, Tenn. President-Elect Custis Lee Hall, Washington, D. C., Secretary & Chairman Detroit Assembly, L. J. Gariepy, 16401 Grand River Avenue, Detroit 27.

ALL MEDICAL MEN AND WOMEN IN GOOD STANDING CORDIALLY INVITED

Intensive Clinical and Didactic Program by World Authorities

Operative Surgical Clinics, Monday morning, October 21 in seventeen Detroit hospitals.

Convocation Speakers: Former Ambassador to Japan Joseph C. Grew, Congressman George A. Dondero from Michigan.

Banquet Speakers: Fleet Admiral Chester W. Nimitz, Vice Admiral Ross T. McIntire, Surg. Gen. Navy, and Morris Fishbein, M.D.

The following is list of members of the profession who will take part in program:

Lyon H. Appleby, Vancouver, B. C.
Hamilton Bailey, London, Eng.
W. Wayne Babcock, Philadelphia
Harry E. Bacon, Philadelphia
Channing W. Barrett, Chicago
Moses Behrend, Philadelphia
A. A. Berg, New York
Prof. J. Bitschai, Cairo, Egypt
Gerald L. Burke, Vancouver, B. C.
Sebastian J. Carnazzo, Omaha, Nebr.
Felipe Carranza, Buenos Aires, Argentina
Alejandro Ceballos, Buenos Aires, Argentina
David deSanson, Rio de Janeiro, Brazil
Francisco Grana, Lima, Peru
J. P. Greenhill, Chicago, Ill.
E. S. Gurdjian, Detroit
Custis Lee Hall, Washington, D. C.
Stuart W. Harrington, Rochester, Minn.
Rudolph Jaeger, Philadelphia
Albert Jirasek, Prague, Czechoslovakia
Charles G. Johnston, Detroit
Wm. E. Johnston, Detroit
Herbert I. Kallet, Detroit
Roland M. Klemme, St. Louis
Lloyd G. Lewis, Baltimore
Wm. C. MacCarty, Rochester, Minn.
Lowrain E. McCrea, Philadelphia
Raymond W. McNealy, Chicago
Karl A. Meyer, Chicago
J. H. Mulholland, New York
Rudolf Nissen, New York
Richard H. Overholt, Brookline, Mass.
Col. John F. Pick, Chicago, Ill.
Carl A. Rosenbaum, Little Rock, Ark.
Max Thorek, Chicago, Ill.
Harold C. Voris, Chicago, Ill.
Robertson Ward, San Francisco
James M. Winfield, Detroit
Otis R. Wolfe, Marshalltown, Iowa
Edwin L. Zander, New Orleans

Hotel Headquarters: Book-Cadillac Hotel and Statler Hotel. FOR HOTEL RESERVATIONS, write C. W. Husband, Chairman, Housing Committee, 1005 Stroh Bldg., Detroit 26, Mich.

Any doctor of medicine who uses surgery in his practice will find this meeting of great value.
A program will be mailed to every member of the medical profession in good standing in the United States and Canada, upon request to the Secretary, about October 1.
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ASSOCIATION OF MILITARY SURGEONS

(Continued from Page 830)

The Association of Military Surgeons of the United States, and the addresses of the surgeons general, by Major General Norman T. Kirk, of the U. S. Army; Vice Admiral Ross T. McIntire of the U. S. Navy; Dr. Thomas Parren of the United States Public Health Service, and Major General Paul D. Hawley of the Veterans Administration.

SEVENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Copley-Plaza Hotel—Boston, Massachusetts
September 30 through October 2

Monday, September 30

Clinical Toxicological Conference—
Lead Poisoning .... All Day

Surgical Conference—
The Foot in Industry .... Afternoon

Professional Relations Conference and
Dinner .... Evening

Tuesday, October 1

Opening General Session .... Morning
Topic—Human Relations in Industry

Elective Seminars .... Afternoon
Section A—Industrial Physiology
Section B—Administrative Methods
Section C—Workmen's Compensation

Dinner and Conference on Pan-American
Industrial Health .... Evening

Wednesday, October 2

General Session .... Morning
Atomic Energy—Its Effects in Industry
and Medicine

General Session .... Afternoon
A Positive Health Program for Industry

Dinner and Conference on Health and Welfare
Programs in Industry .... Evening

(NOTE: All requests for hotel rooms should be made through the Copley-Plaza Hotel.)

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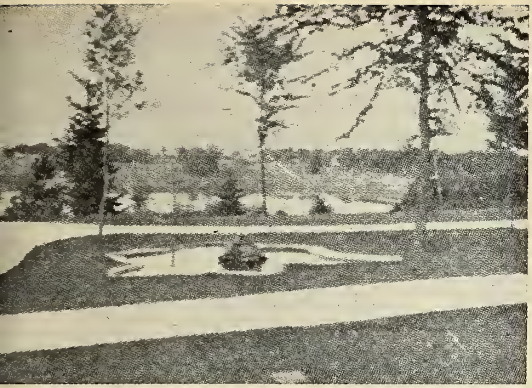

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Of General Interest

Dr. Herman E. Koop closed his offices at Cold Spring on June 15, and has discontinued his medical practice indefinitely because of ill health.

* * *

Dr. Frederick A. Figi, of the Mayo Clinic, was reelected secretary-treasurer of the American Association of Plastic Surgeons at the annual meeting in Toronto.

* * *

After fifteen years of practice at Vernon Center, Dr. Julius A. Haes has closed his offices there and moved to Mankato, where he is associated with Dr. Austin V. Denman.

* * *

Dr. Horton C. Hinshaw was elected a vice president of the National Tuberculosis Association at the organization's forty-second annual meeting held in Buffalo, New York.

* * *

Dr. Watler W. Higgs, Park Rapids, is being assisted in his office during the summer months by his son, Robert, who is a medical student at Tulane University in New Orleans.

* * *

Dr. William A. Coventry, of Duluth, has been awarded the Distinguished Service Medal of the Minnesota State Medical Association, "in recognition of his many years in honorable practice of medicine in Minnesota."

* * *

Dr. Carl Ahl, who was associated with the Mesaba Clinic and Rood Hospital in Coleraine from 1937 until his induction into the Army Medical Corps in 1942, has returned to the Clinic.

* * *

The appointment of Dr. Byrl R. Kirklin, of Rochester, to the Advisory Board for the Bulletin of the United States Army Medical Department has been announced by the Surgeon General of the U. S. Army.

* * *

The Alexandria Clinic, composed of Dr. George W. Clifford, Dr. C. Edwin Carlson, Dr. Loren F. Wasson and Dr. Harold L. Stemsrud, is now located in the new building at 613 Broadway, which has been under construction for some months.

* * *

Dr. Richard J. Lien has entered the practice of pediatrics in St. Paul in association with Dr. Alfred J. Ouellette. Offices are maintained at Highland Village and in the Northome Business Center at 1530 Larpenteur Avenue.

* * *

Dr. Edward Starr Judd, Jr., who has been in active service in the Army Medical Corps since June 19, 1943, has resumed his work at the Mayo Clinic. Dr. Judd, with the rank of major, was attached to the 237th Station Hospital in New Guinea and the Philippines.

Dr. Paul C. Leck has resumed his practice in Austin in his offices in the Medical Building on Main Street. Dr. Leck recently completed a six months' postgraduate course in medicine and surgery, which he began immediately following his release from the Army, where he had attained the rank of major.

* * *

Dr. Gordon Paulson, who since his release from military service has been practicing at Fergus Falls, was married on June 13 to Miss Jane Lundquist at Patton, Pennsylvania. Mrs. Paulson, a former Army nurse, and the doctor met for the first time when both were assigned to duty at Naples, Italy.

* * *

After three years in military service, Dr. M. S. Sekhon has resumed his civilian practice with offices at 1533 Como Avenue. Dr. Sekhon, who is a physician and surgeon, was a captain in the Army Medical Corps. He is a graduate of Hamline and the University of Minnesota Medical School.

* * *

A special award of merit has been presented by the Minnesota Hospital Association to Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, in recognition of his services as chairman of the Association's Public Education Council.

* * *

According to an announcement issued by James H. Baker, executive secretary of the Hennepin County Medical Association, all but forty of the Minneapolis doctors in military service have returned to civilian practice. Those still on military assignment are mostly young men who were inducted directly from internship.

* * *

Dr. Felipe Torres, of Mexico City, is assisting Drs. Harold E. and Cecil A. Wilmot in their pactice at Litchfield, Minnesota, during the summer months. Dr. Torres, who recently completed his internship, also took some special work in surgery under Dr. Martin Nordland in Minneapolis.

* * *

Dr. Iver S. Benson, formerly in practice in Willmar and Montevideo, and in recent years a member of the Bridge Clinic in Tacoma, Washington, has retired from practice because of failing health. Dr. Benson expects to make his home in Minneapolis later, but for the time being he is living at Detroit Lakes.

* * *

Dr. William Cleaves, who immediately prior to his entry into the armed services was practicing at Grand Rapids, is now associated with Dr. Werner J. Lund at the Staples Clinic.

Dr. Cleaves is a graduate of the University of Minnesota. He was discharged from service last fall after

(Continued on Page 836)

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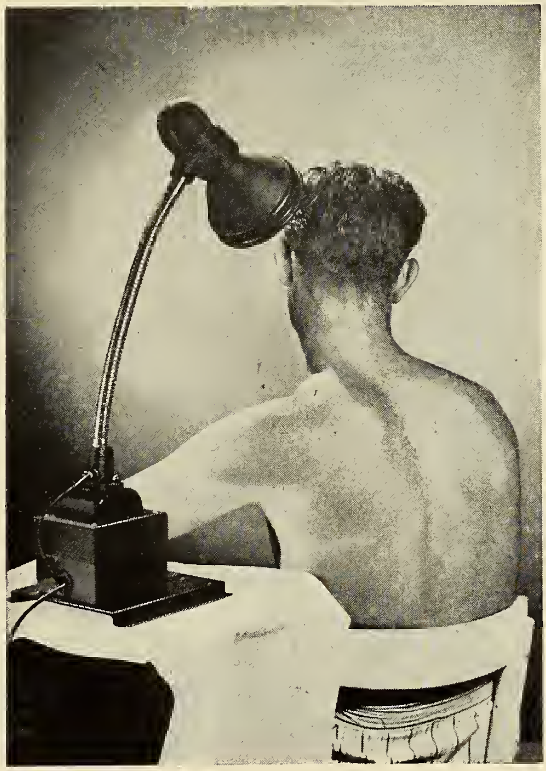

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(Continued from Page 834)

forty-two months in the Pacific Theatre. Since then he has been doing postgraduate work in surgery at the University.

* * *

Dr. Walter F. Muir, a member of the clinic at Graceville until he entered military service, is now in practice at Browns Valley, which has been without a resident physician since the death of Dr. Bert V. Bates. Dr. Muir has his offices in the building formerly occupied by Dr. Bates, recently purchased by Dr. Irvin L. Oliver, of Graceville.

* * *

Dr. Edward Bratrud, of Thief River Falls, was reelected president of the Northwestern Minnesota Association of Conservation Clubs at the annual meeting in East Grand Forks. Dr. Bratrud has announced his intention of retiring from medical practice to devote his entire time to conservation projects in which he has always been keenly interested.

* * *

Dr. Richard Scammon, of the Department of Anatomy, Graduate School, University of Minnesota, was guest speaker at the annual dinner of the Aesculapian Club of St. Thomas College at the Commodore Hotel in Saint Paul on June 11. Dr. Scammon, a national authority in his field, discussed modern trends in medicine. The club is the oldest on the St. Thomas Campus, and many prominent Twin City physicians are former members.

Dr. Winchell McK. Craig, of the Mayo Clinic, has been elected national director-at-large of the Reserve Officers of the Naval Services. He was also made a council member of the new organization. Dr. Craig, a rear admiral in the Navy Medical Corps—the highest rank attainable in the corps—was recently released from service and has resumed his work at the Clinic.

* * *

Dr. Peter J. Schultz, who recently returned from two years in military service, has opened offices in the Atkinson Clinic Building, 6 East Diamond Lake Road, Richfield. Prior to his entry into the Army Medical Corps, where he held the rank of major, Dr. Schultz was engaged in general practice in Minneapolis and Richfield with offices at Nicollet Avenue and 54th Street.

* * *

Dr. Asher A. White, internist at the Nicollet Clinic in Minneapolis, while still on terminal leave was recalled to active duty with assignment on Bikini to assist in tests for possible harmful radiation action in the bomb area. A lieutenant colonel, Dr. Asher served for three years on the atomic bomb project at Oak Ridge, Tennessee, and Richmond, Washington.

* * *

Mr. and Mrs. George T. Jacobson, St. James, Minnesota, have announced the marriage of their daughter, Phyllis Lovaun Jacobson, to Dr. Dale Quinn Furnell, son of Mr. and Mrs. Luther D. Furnell, of Saint Paul, on June 15.

Dr. Furnell, who is a graduate of the University of

Minnesota Medical School, recently completed his internship at Ancker Hospital. Mrs. Furnell will graduate from the Hamline-Asbury School of Nursing next February.

* * *

Dr. Joseph Dawes Waller, who, with the exception of ten months' service in World War I, has been in continuous practice in Wilmont since 1915, has announced his retirement. Before locating in Wilmont, Dr. Waller was in practice in Minneapolis for seven years.

Dr. and Mrs. Waller are now living in the new home which they purchased last fall on Cross Lake in Pine City.

* * *

Dr. Howard M. Odel completed his terminal leave from the Navy Medical Corps on June 15 and has returned to the Mayo Clinic where he is a consultant in medicine. Dr. Odel entered service in December, 1943, and from the following May until December, 1945, was assigned to overseas duty on the *USS Haven.* A lieutenant commander, he was stationed at the U. S. Navy Hospital in Philadelphia since January of this year.

* * *

Major E. M. Hammes, Jr., is now on terminal leave from the army service and will be a partner of his father, Dr. E. M. Hammes, Lowry Medical Arts Building, for the next few months, after which time he will again be connected with the Mayo Clinic to complete his fellowship in neurology. Major Hammes' last assignment in the army was as consultant in nervous and mental diseases for the First Army with headquarters in Long Island, New York.

* * *

Dr. Ray D. Davis has closed his practice at Clearbrook and has moved to Waseca where he is associated in practice with Dr. Bernard J. Gallagher. Dr. Davis is a graduate of the University of Minnesota Medical School and served his internship at St Luke's Hospital in Duluth. He has been practicing for about ten years.

Dr. Gallagher has gone East with his family for an extended vacation, the first since his former associate, Dr. George Olds, was inducted into military service early in the war.

* * *

The Bronze Star Medal has been awarded to Dr. Kenneth H. Abbott, a fellow in neurologic surgery at the Mayo Foundation, "for meritorious achievement in connection with military operations against the enemy on Cebu, Philippine Islands from March 26 to April 25, 1945." The citation specifically mentions Dr. Abbott's working from eighteen to twenty hours daily, within range of enemy machine gun and artillery fire, when he performed more than 200 operations, many of which "were delicate and time-consuming brain operations."

* * *

Dr. Earl Black, who was recently released from military service, has opened offices for the practice of internal medicine, specializing in diseases of the chest, at 541 Lowry Medical Arts Building, Saint Paul. A major and platoon commander assigned to the Fifty-third Field Hospital, Dr. Black took part in the invasion of France. On V-E Day he was at Magdeburg, Germany.

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Dr. Howard K. Gray, Mayo Clinic, has been presented with the Legion of Merit by the Secretary of the Navy. The accompanying citation says in part: "Captain Gray contributed greatly to the successful accomplishment of the task of inspecting and alerting Naval hospitals throughout the United States with regard to wartime surgery. . . . Captain Gray was responsible for saving the lives of many men in addition to greatly aiding these hospitals in the fulfillment of their vital missions during the prosecution of the war. . . ."

* * *

With the sale of his practice to Dr. James E. Ponterio, Dr. Frederick Buck has terminated thirty-five years of general practice in Shakopee. Dr. Ponterio, who was discharged from the Army in January, 1946, after twenty-one months of duty at the 251st Station Hospital in the South Pacific, was formerly associated with Dr. J. Anthony Malerich at the Shakopee Hospital. He is now located in Dr. Buck's former offices in the First National Bank Building.

Dr. Buck came to Shakopee from Canada in 1911. He does not anticipate making any change of residence.

* * *

Dr. George E. Brown, Jr., who was in practice at Pine City before entering military service, is now completing a fellowship at the Mayo Foundation.

Dr. Brown left the Foundation on a leave of absence in October, 1940 to enter private practice at Pine City. He was inducted into the Army Medical Corps in January, 1944 and served both overseas and in this country during the war. He was released from active service on June 1, 1946 with the rank of major, having served his last tour of duty as Chief of General Medicine at Gardiner General Hospital in Chicago.

* * *

Mr. and Mrs. E. J. MacDonald announce the marriage of their daughter, Virginia Louise, to Dr. H. Penn Harper, son of Mrs. Nona Harper of Edina, Minnesota, which took place at the Church of the Ascension in Saint Paul.

Dr. Harper, a graduate of the University of Minnesota Medical School, was awarded the Legion of Merit for outstanding accomplishment as commanding officer of the first field hospital established beyond the Rhine.

Mrs. Harper attended the University of Minnesota and was an airline stewardess for the past two years.

* * *

Dr. Donald R. Navratil, formerly of Silver Lake, has taken over the practice of Dr. Joseph O. McKeon at Montgomery. Dr. Navratil graduated from the University of Minnesota Medical School in 1942. Following the completion of his internship at St. Mary's Hospital in Minneapolis, which included a year in surgery and eight months in residence, he enlisted in the Army Medical Corps. He was recently discharged with the rank of major after three years in service.

Mrs. Navratil, who is a registered nurse, will assist Dr. Navratil in the office.

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TRADE-MARK

Eight new members and two transfers were admitted to the Hennepin County Medical Society at the May meeting. The new members are Dr. H. Francis Forsythe, 401 Medical Arts Building; Dr. Herman K. Koschnitske, General Hospital; Dr. John W. Olson, 4012 Minnehaha Avenue; Dr. John A. Seaburg, Veterans Hospital; Dr. Baxter A. Smith, 306 Medical Arts Building; Dr. Leonard A. Titrud, University Hospitals, and Dr. Robert W. Werner, 1025 West Broadway.

The transfers were Dr. Bourne Jerome, 1750 Medical Arts Building, and Dr. John W. Johnson, 751 Medical Arts Building.

* * *

Dr. Hart E. Van Riper of Scarsdale, New York, has been appointed medical director of the National Foundation for Infantile Paralysis. He has been serving as acting medical director since the death of Dr. Don W. Gudakunst in January, 1946.

A native of Kirkwood, Illinois, he received his M.D. from the University of Pennsylvania in 1930. He practiced pediatrics in Madison, Wisconsin, from 1933 to 1941, serving also as medical director of the Wisconsin Life Insurance Company. For three years he was assistant director for maternal and child health in the U. S. Department of Labor's Division of Health Services.

* * *

Dr. Aaron E. Henslin, of LeRoy, was one of nine Minnesota physicians who were made members of the Fifty Club of the State Medical Association at the regular annual meeting in May. Before coming to Minnesota in 1896, Dr. Henslin, who is now in his eighty-first year, had been in practice in Iowa for five years. During his half century of medical service in Minnesota he delivered more than 1,200 babies. He has the distinction of having performed the first appendectomy in Mower County. Although the operation was performed on a table in a farm home, it was successful and the patient, a woman, lived for many years.

* * *

Dr. Herbert L. Stolpestad has resumed his practice at 786 East Seventh Street in Saint Paul. A captain in the Army Medical Corps, Dr. Stolpestad was a member of a staff of twelve medical officers and four surgeons at an emergency field hospital located at Tunbridge Wells, England, who worked unceasingly on D-Day for forty-eight hours, giving emergency treatment to the wounded before their evacuation to general hospitals in the interior. During the nine days immediately following, Dr. Stolpestad said that as many as 1,780 patients were cared for in a single day.

When diversion of army personnel to Japan was begun, Dr. Stolpestad was ordered to that theatre, but when two days out from Panama V-J Day was announced, the ship proceeded instead to the United States.

* * *

The National Society for Medical Research has been established under the sponsorship of the Association of American Medical Colleges with headquarters at 25 E. Washington Street, Chicago, Dr. Anton J. Carlson, professor emeritus of physiology at the University of Chicago, is president, and Ralph A. Rohweder is executive secretary.

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The purpose of the society is the advancement of research in medicine, biology, pharmacy, dentistry and veterinary medicine. An important function of the society is to analyze and expose the propaganda of small but highly vocal groups which object to the use of animals in experimentation, without which medical science would not have advanced so remarkably.

* * *

Dr. John Nickerson, formerly of Akron, Ohio, has entered general practice at Heron Lake, Minnesota. Dr. Nickerson is a graduate of Kent State University, Kent, Ohio. He took his medical degree at Western Reserve University, Cleveland, in 1940, and has also done postgraduate work under a research fellowship at the University of Pennsylvania. A veteran of the recent war, his military assignments included service as assistant surgeon in the Coast Guard; ward surgeon in charge of a seventy-bed ward at the Marine Hospital, where he was engaged in general surgery, orthopedics and traumatic surgery. Later he assisted in teaching a class in orthopedics for students of Tufts Medical School at the Marine Hospital.

Dr. Nickerson is thirty-two, married, and has four children.

* * *

After an absence in military service of five years, Dr. Lloyd A. Smith has returned to Balaton and resumed his practice. Inducted into the Army Medical Corps in May, 1941, Dr. Smith was on duty at various camps in this country until May 2, 1944, when he was sent overseas on assignment. He was stationed in England for a brief period, then was transferred to the continent, where he had many months of front line duty for which he was awarded the Bronze Star Medal and five Battle Stars. Dr. Smith was a major when he was discharged from service, but he has since been commissioned a colonel in the Reserve Corps. Since returning to this country last September, he has been engaged in postgraduate work in Chicago.

* * *

The Bronze Star Medal has been awarded to Dr. James R. Gay, of the Mayo Clinic, for "meritorious service . . . in the European Theatre from September 1, 1944, to April 13, 1945."

A major in the Army Medical Corps, Dr. Gay established four general, two station and one convalescent hospitals in the Paris area. He also was presented with the Medal of the French Reconnaissance from General de Gaulle, President of the Provisional Government of the French Republic, for "exceptional services of war rendered in the course of the operations for the Liberation of France."

Dr. Gay was inducted into military service in January, 1942, and he returned to the Clinic, where he is a fellow in neurologic surgery, in January, 1946.

* * *

Five University of Minnesota professors have been awarded grants for medical research by the John and Mary R. Markle Foundation, of New York City. They are:

Dr. Charles A. Evans, three grants totaling $6,000 to be used in his study of virus infections of intra-ocular tissues and lymph nodes.

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Drs. Nathan Lifson and Victor Lorber, a grant of $1,000 to be used in their work on carbon dioxide fixation by intact mammalian muscles.

Dr. Cecil J. Watson, $10,800 for use in his study of porphyrin metabolism as related to nervous and endocrine function.

Dr. Ancel Keys, $8,800, to assist in his studies on inducted nutritional deficiencies and rehabilitation.

* * *

Announcement has been made of the appointment of Dr. Sigsbee R. Seljeskog as superintendent of the Elizabeth Kenny Institute in Minneapolis, succeeding Dr. Francis E. Harrington, who has been officiating on a temporary basis for the past several months because of ill health.

Dr. Seljeskog graduated from the University of Minnesota in 1936 and was in practice in Minneapolis prior to his entry into military service in 1941. A lieutenant colonel in the Army Medical Corps, Dr. Seljeskog commanded a unit of the first field hospital set up on the continent after the invasion of Normandy. He recently returned from Germany, where he had been in command of a unit of the 13th Field Hospital.

Dr. Harrington, who founded the Lymanhurst Health Center for tuberculous children, has been a resident of Minneapolis since 1920, when he was brought there to reorganize the city health department. He was city health commissioner until 1944, and between 1937 and 1945 he served as superintendent of General Hospital during two separate periods.

Contributions by the medical profession in North America to *Revista Brasiliera De Medecina* have been requested by the editor, Dr. A. Da Silva Mello, professor of medicine at the University of Rio de Janeiro. Articles covering both medicine and surgery are desired and may be written in English. Translation into Portuguese will be made in Brazil, and if the material is original, a summary in English will be presented with the translation.

* * *

Dr. Edwin F. Leibold, who was recently discharged from the Coast Guard after three years of continental and overseas duty, is engaged in a partnership with Dr. Edward E. Novak in New Prague, and has purchased a home there.

A native of Shakopee, Dr. Leibold took his medical degree at Marquette University. Following the completion of his internship at St. Mary's Hospital in Duluth, he spent three months studying diseases of the chest at Nopeming.

* * *

Dr. S. F. Ceplecha has resumed his practice at Redwood Falls after an absence of five years in the Army Medical Corps. His terminal leave began last September, but he has been in surgical residence with Dr. Max Thorek, chief surgeon at the American Hospital in Chicago, until his recent return to Redwood Falls.

Dr. Ceplecha's first military assignment was as a battalion surgeon. Following a brief period of service in this country he was made a regimental surgeon and officer in charge of x-rays of a 500-bed station hospital in Alaska and remained there for twenty-one months.

Returned to the States, he was appointed commanding officer of a medical battalion which he took to the Aleutians, where he stayed for eight months. He was then assigned to duty in this country for five months. His next assignment was with the 103rd General Hospital in England and at the same time he did postgraduate study in surgery at the University of London. Later he was made commanding officer of a station hospital of 750 beds at Villers, Helon, France. From there he was sent to Eberstadt, Germany, where he assisted in establishing a hospital center with a capacity of 5,000 patients and was made commanding officer. Dr. Ceplecha's last overseas duty was as Commanding Officer of the 84th Armored Medical Battalion, with which he returned to this country in August, 1945. He was released from active duty in December, 1945, with the rank of colonel.

* * *

June, 1946, was a month doubly significant in the history of Brainerd, for it not only marked the city's diamond jubilee but the fiftieth anniversary of Dr. John A. Thabes' medical practice.

Dr. Thabes has lived in Brainerd since 1882, when he came with his parents from Minneiski, Minnesota. He graduated from the University of Minnesota School of Medicine in 1896 and entered practice in Brainerd in partnership with the late Dr. J. L. Camp. His present associates in practice are his brother-in-law, Dr. Irving Badeaux, and his only son, Dr. John A. Thabes, Jr.

In speaking of the early days, Dr. Thabes recalls that there were no telephones and practically no roads; that many times the only way of getting to the patients was by horseback or walking and more than once he narrowly escaped freezing to death when lost on the prairies in temperatures of forty degrees below zero.

Dr. Thabes was the first sponsor of the Deerwood Tuberculosis Sanitarium operated jointly by Aitkin and Crow Wing Counties and he has been president of the governing board since the sanitarium was established in 1918. He is one of the founders of the Upper Mississippi Medical Society. He was the first secretary and later was president of the organization. In addition to his professional work, Dr. Thabes has also found time to take an active part in civic affairs. He served as city health officer for six years and was a member of the school board for four years.

* * *

HOSPITAL NEWS

Dr. John M. Culligan, Saint Paul physician and surgeon, has been appointed chairman of the committee in charge of the campaign to raise a $300,000 building fund for the Villa Marie Academy conducted by the Sisters of the Urseline Order at Frontenac. Dr. Culligan is well known in Roman Catholic circles throughout the state.

* * *

Miss Clara E. Boeck, successor to Miss Mary J. Johnson as superintendent of Union Hospital at New Ulm, assumed her duties on June 1. Miss Boeck comes from

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Plymouth, Wisconsin, where she was superintendent of the hospital for the past four years.

Miss Johnson, who has retired, has returned to her home in Christine, North Dakota.

* * *

A program of mass x-ray surveys conducted by the Hennepin County Tuberculosis Association with treatment and rehabilitation employed in tuberculosis was presented before thirty-five members of the Nicollet County Public Health Nursing Committee at the Glen Lake Sanatorium in June.

Dr. Sumner S. Cohen, Associate Director of the Sanatorium, discussed modern methods of treatment of tuberculous patients.

* * *

Earl C. Wolf, purchasing agent at St. Mary's Hospital in Rochester, was elected first vice president of the Minnesota Hospital Association at the annual convention in Saint Paul.

* * *

Announcement has been made of the endowment of a room in the new hospital conducted by the Sisters of St. Joseph at Park Rapids by Herbert B. Stone in memory of his mother, Martha E. Mann Stone. The memorial is particularly fitting, as Mrs. Stone was a devoted and untiring worker in the hospital established in the early days of Park Rapids by her husband, the late Dr. W. T. Stone. It was while on duty there that she was stricken with the attack of apoplexy on January 21, 1917, which ended in her death two days later.

* * *

Miss Georgia Weisbrod, for many years head of the nursing staff of the Community Hospital at Clarkfield, has been appointed superintendent of the new Community Hospital at Clarkfield, which opened there on July 15.

* * *

The following officers were elected by the board of directors of the Montevideo Hospital at the annual meeting: Theodore A. Arneson, president; H. L. Hamilton, vice president, and E. O. Wilson, secretary and treasurer.

* * *

The American Hospital Association has singled out the Minnesota State Hospital Association's educational program as the best in the nation, according to a statewide basis, for the third consecutive year. Miss Dina Bremness, president of the Minnesota organization, was presented with a plaque in recognition of the honor by Dr. Peter Ward at the annual meeting of the Association. Miss Bremness is superintendent of the Community Hospital at Glenwood.

* * *

Announcement has been made of the election of the following officers at the annual staff meeting of the Glencoe Municipal Hospital on June 11: Dr. Henry G. Goss, Glenco, chief of staff; Dr. Arthur Neumaier, Glencoe, secretary, and Dr. Leonard Kallsted, of Brownton, vice chief of staff. All are veterans of World War II.

* * *

A testimonial dinner was given by the Sisters of the Order of St. Benedict, who operate the hospital at St.

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Cloud, in honor of Dr. Claude B. Lewis on the occasion of his retirement from active to honorary staff member on June 20. Dr. Lewis came to St. Cloud forty-two years ago from Sauk Center, where his father was in medical practice, and joined the staff of the St. Cloud Hospital a year later. A brother of the novelist, Sinclair Lewis, he is supposed to have been the model for the character of Dr. Kennecott in *Main Street.*

* * *

E. A. Jarvinen of Minneapolis has assumed the duties of superintendent at the Itasca County Hospital in Grand Rapids, succeeding M. O. Paulson, recently resigned. Mr. Jarvinen comes to Grand Rapids with several years of experience in hospital management, having been with the Swedish Hospital, Minneapolis, and the Wright Memorial Hospital in Fergus Falls. He is a member of the Poor and Hospital Commission.

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MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 827)

to rely on that procedure. I don't know just what such a tube will do. Certainly, rubber is pretty irritating to tissues, and I feel that there would be some fibrosis caused by the use of this tube, and I wonder whether or not there will not be some damage to the sphincter of Oddi.

As to when to take the rubber tube out, I don't know. I can tell you when we take ours out and two of the things we go on. I should say there is a tendency to take out the tube earlier now, that is a tube put in following an opening into the common duct. You explore the common duct and because you open it you feel that you should put in a tube. We used to take the tubes out in three or four weeks; now we try to get them out within ten days. The last patient on whom we operated had the tube in for only eight days.

There are three tests, and we use any one of them or all three of them. First, not to take the tube out unless the patient can have it clamped and be free of discomfort for at least twenty-four hours and usually several days. Second, make a cholangeogram. I would be inclined to make all tests before removing the tube.

A test for the resistance of the sphincter of Oddi is simply to attach a water manometer to the end of the T-tube and allow saline to flow in from a reservoir which is gradually raised. The sphincter should be overcome by 90 mm. of water. Dr. George Pearse indorses this as a very valuable test. It isn't very tedious to do, but we do not do it in every case. If the sphincter of Oddi is not overcome by the pressure, we are inclined to leave the tube in a little longer. Maybe this is too scientific.

The meeting adjourned.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Ophthalmology in the War Years. Vol. 1 (1940-1943). Edited by Meyer Wiener, M.D. Professor of Clinical Ophthalmology, Washington University School of Medicine; Honorary Consultant in Ophthalmology, Bureau of Medicine and Surgery, United States Navy. 1166 pages. Price, $13.50, cloth. Chicago: Year Book Publishers, 1946.

Anesthesia in General Practice. Stuart C. Cullen, M.D. Head of Anesthesiology, Department of Surgery, State University of Iowa Hospitals; Associate Professor of Surgery (Anesthesiology), University of Iowa College of Medicine. 260 pages. Illus. Price, $3.50, cloth. Chicago: Year Book Publishers, 1946.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAIN. John Albert Key and H. Earle Conwell. Ed. 4. 1322 pages. Illus. Price $12.50. St. Louis: C. V. Mosby Co., 1946

The new edition of this work is essentially the same comprehensive volume as formerly. There is added material on compound fractures and newer methods have been dealt with. As in previous editions it offers a ready reference to the treatment of traumatic lesions of the skeletal system.

Stewart Shimonek, M.D.

VOCATIONAL AND PROFESSIONAL MONOGRAPH, Number 65, Physiotherapy. Thomas Francis Hennessey, M.D. 23 pages. Price, 75 cents. Boston, Massachusetts: Bellman Publishing Company, Inc., 1946.

This monograph, one of a series of seventy-five occupational booklets, gives factual information to whomever seeks information in helping choose a life's work or to those who act as advisors in such choices. The outline includes personal qualifications, and scholastic training needed to enter the field and the employment and remunerative possibilities.

The guide to the field of Physiotherapy gives encouragement to those interested in this branch of medical therapy. The author, who has been in the field as practitioner and teacher for twenty-five years, says that he is unable to discover a serious disadvantage for the physiotherapy technician and that the advantages are numerous.

M. J. O. Gullingsrud, M.D.

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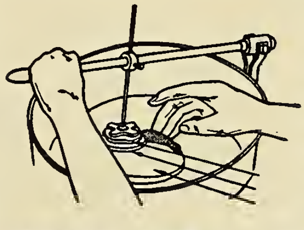

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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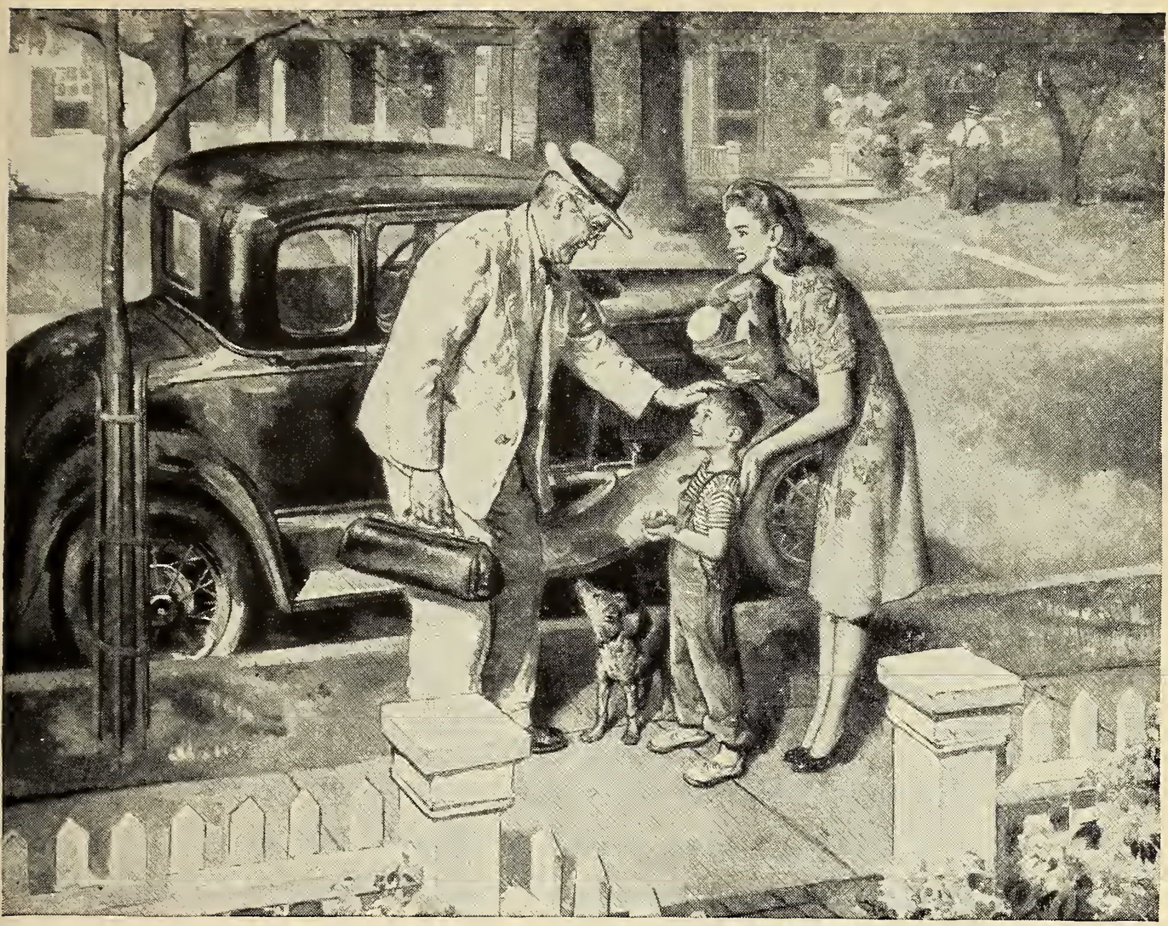

The doctor makes his rounds

● Wherever he goes, he is welcome . . . his life is dedicated to serving others.

Not all his calls are associated with illness. He is often friend and counselor . . . he is present when life begins, watches it flourish and develop. His satisfactions in life are reflected in the smiling faces of youngsters like this one above, and of countless others whom he has long attended.

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In the recent past, increasing attention has been called to the influence of severe infections upon protein metabolism and the profound destruction of tissue and serum protein which occurs in these states.[1, 2]

In many instances, prompt control of infection by sulfonamides or penicillin is not followed by the desired degree of systemic improvement. Instead, protracted, stormy convalescence supervenes. A factor which is often responsible for delayed recovery is known to be the intense protein depletion which not only accompanies but also follows in the wake of infectious disease. Not infrequently, recovery can be sharply hastened by correction of existing nutritional deficiencies, foremost among them, protein deficiency. A protein intake, adequate both qualitatively and quantitatively, thus gains increasing significance as an integral part of therapy whenever the condition under treatment is known to lead to increased nitrogen excretion.

Among the protein foods of man meat ranks high, not only because it is rich in complete, biologically adequate protein, but also because its palatability and the many attractive ways it can be prepared make it acceptable to most patients.

---

[1] Tillett, W. S., Cambier, M. J., and McCormack, J. E.: The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin, Bull. New York Acad. Med. *20*:142, March, 1944.

[2] Armstrong, S. H., Jr.; England, A. C., Jr.; Favour, C. B., and Scheinberg, I. H.: Anemia and Hypoproteinemia Complicating Severe Protracted Pneumonia: Treatment with Penicillin—Role of Specific Supportive Therapy in Recovery, J.A.M.A. *127*:303 (Feb. 10) 1945.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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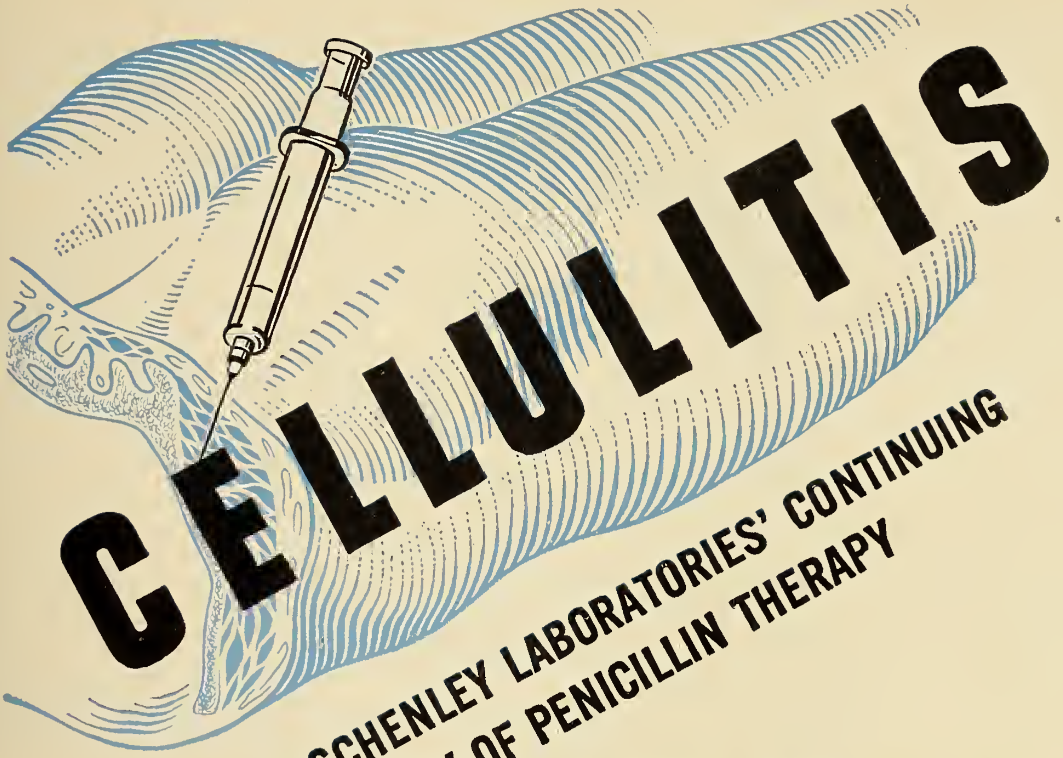

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The administration of penicillin combined, when indicated, with surgical, supportive, and other measures, will in most instances rapidly control and eradicate the infection. Thus, the duration of the disease is shortened, and the possibility of complications reduced to a minimum.

A daily total of 160,000 to 480,000 units, depending upon the severity of the infection, in divided doses every 2 to 3 hours by the intramuscular route will usually be adequate to effect a cure. Duration of the course will depend upon response to therapy. If thought desirable, as a supplement to parenteral administration, penicillin may be employed by local injection or instillation of solutions containing 5,000 to 50,000 units per cc.

WOLLGAST, C. F.: *The Clinical Use of Penicillin: A Report of 115 Cases Treated in an Army Hospital, Texas State J. M. 40:225 (Aug.) 1944.* FARQUHARSON R. F.; GREEY, P., & TOWNSEND, S. R.: *Results of Penicillin Therapy: A Report for the Joint Services Penicillin Committee, Canad. M. A. J. 53:1 (July) 1945.*

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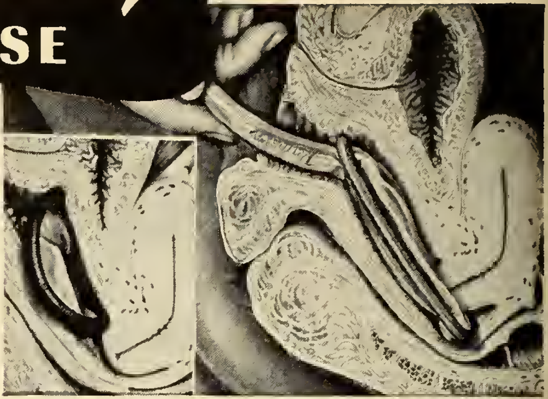
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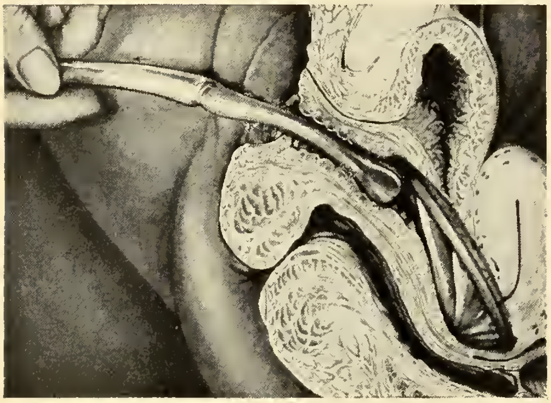

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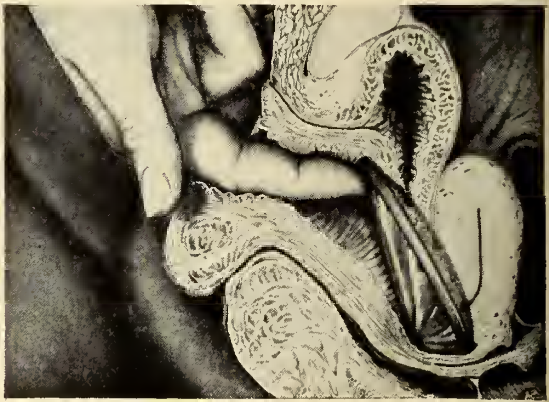

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ESTINYL (ethinyl estradiol), a derivative of the natural follicular hormone, embodies these desirable attributes. In the menopause one tablet of 0.05 mg. daily usually suffices, but two or three tablets may be used daily to control severe symptoms.

ESTINYL Tablets 0.05 mg. (pink) and 0.02 mg. (buff) in bottles of 100, 250 and 1000 tablets.

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Taken cold during the summer months or hot during the wintertime, the delicious food drink made by mixing Ovaltine with milk provides a wealth of essential nutrients in readily digested and assimilated form. Its delicious taste makes it enjoyable at every season. As a supplement to an inadequate diet, in the correction of the milder forms of malnutrition, or when the intake of all essential nutrients must be augmented, it makes a worth-while contribution, as indicated by its composition shown in the table below. This dietary supplement provides biologically adequate protein, readily utilized carbohydrate, highly emulsified fat, ascorbic acid, B complex and other vitamins, and essential minerals. Its low curd tension makes for rapid gastric emptying and easy digestibility. It is relished by both children and adults, and is unusually acceptable either as a mealtime beverage or with between meal snacks.

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CALCIUM	1.12 Gm.	VITAMIN C	39.6 mg.
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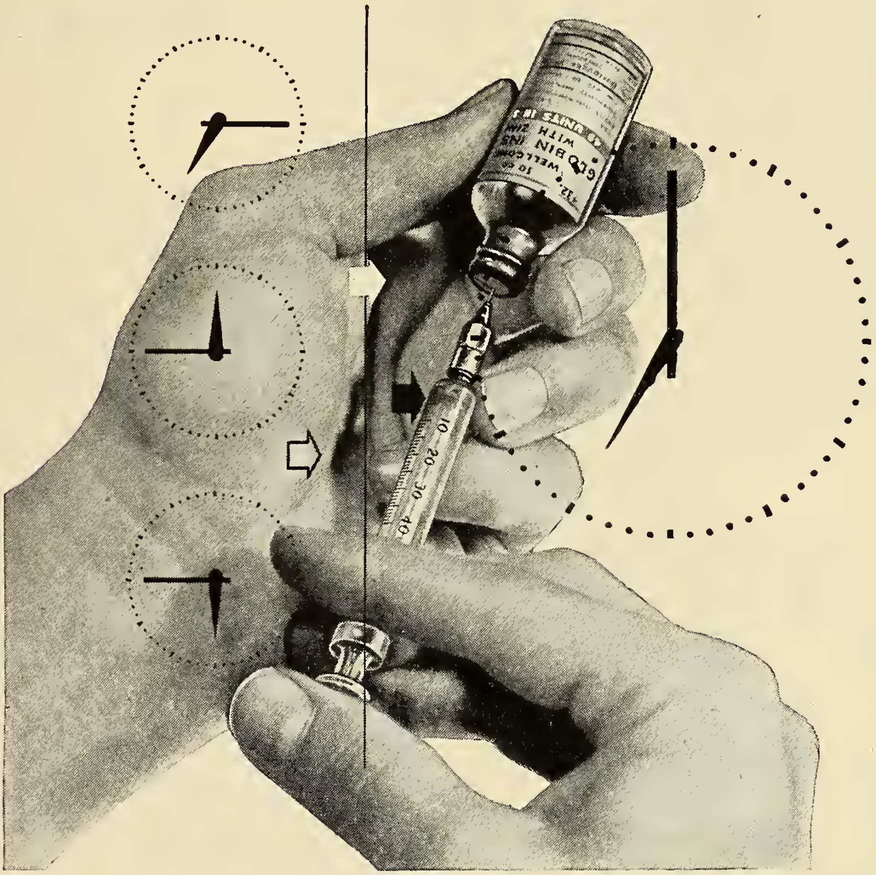
*Based on average reported values for milk.

How to shift to 'WELLCOME' GLOBIN INSULIN from 3 injections to 1 a day...



A relatively simple procedure can make the unique advantages of intermediate-acting 'Wellcome' Globin Insulin with Zinc available to patients on regular insulin (crystalline or amorphous). Three steps can change the patient from two or more injections daily to one injection a day.

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STEP 3 Increase or otherwise adjust the daily dose of Globin Insulin as required. This adjustment is made in conjunction with step 2. Frequently, the final dosage of Globin Insulin will be not more than 4/5 the total units of regular insulin previously required daily.

Available in 40 and 80 units to the cc., vials of 10 cc. *'Wellcome' Trademark Registered.*

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Globin Insulin
WITH ZINC

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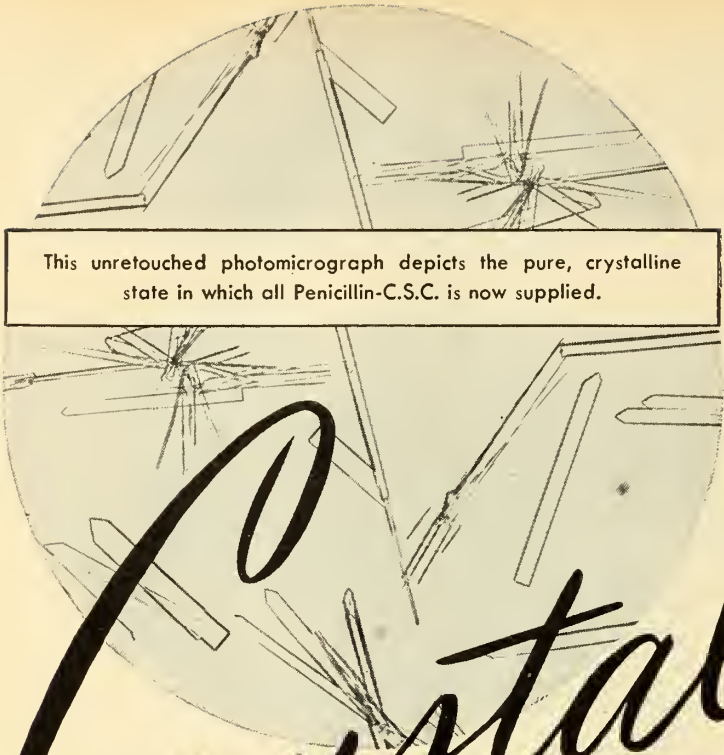

This unretouched photomicrograph depicts the pure, crystalline state in which all Penicillin-C.S.C. is now supplied.

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Crystalline PENICILLIN SODIUM-C. S. C.

As a result of special processes of purification and crystallization, all Penicillin-C.S.C. is now supplied in the form of the highly purified, heat-stable Crystalline Sodium Salt of Penicillin-C.S.C.

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In the crystalline state Penicillin Sodium-C.S.C. is so pure that it can be administered subcutaneously even in large doses with virtually no pain or danger of untoward reactions due to impurities.

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*CAUTION: Once in solution, however, penicillin still requires refrigeration.

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Because of its high potency per milligram, Crystalline Penicillin Sodium-C.S.C. exerts optimal therapeutic activity. A recent report shows the advantage of highly potent preparations.[1]

Potency Clearly Stated on Label

The high state of purification achieved in Crystalline Penicillin Sodium-C.S.C. is indicated by *its high potency per milligram.* The number of units per milligram is stated on each vial, thus enabling the physician to know the degree of purification of the penicillin he is using.

[1] "The potency of the penicillin undoubtedly affected the results. The first 15 patients, all treated with the same batch of penicillin, were cured. The next 7 patients were treated with the same dosage of a different batch of penicillin. Five of these 7 were not cured. Assays of penicillin used for these 7 patients showed it to be of reduced potency." Trumper, M., and Thompson, G. J.: Prolonging the Effects of Penicillin by Chilling, J.A.M.A. *130*: 628 (March 9) 1946.

200,000 UNITS
PENICILLIN-C.S.C.
Crystalline Sodium Salt
CAUTION: For administration only under physician's direction. See brochure
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Crystalline Penicillin Sodium-C.S.C. is available in serum-type vials containing 100,000, 200,000, or 500,000 units.

Penicillin-C.S.C. is accepted by the Council on Pharmacy and Chemistry of the American Medical Association

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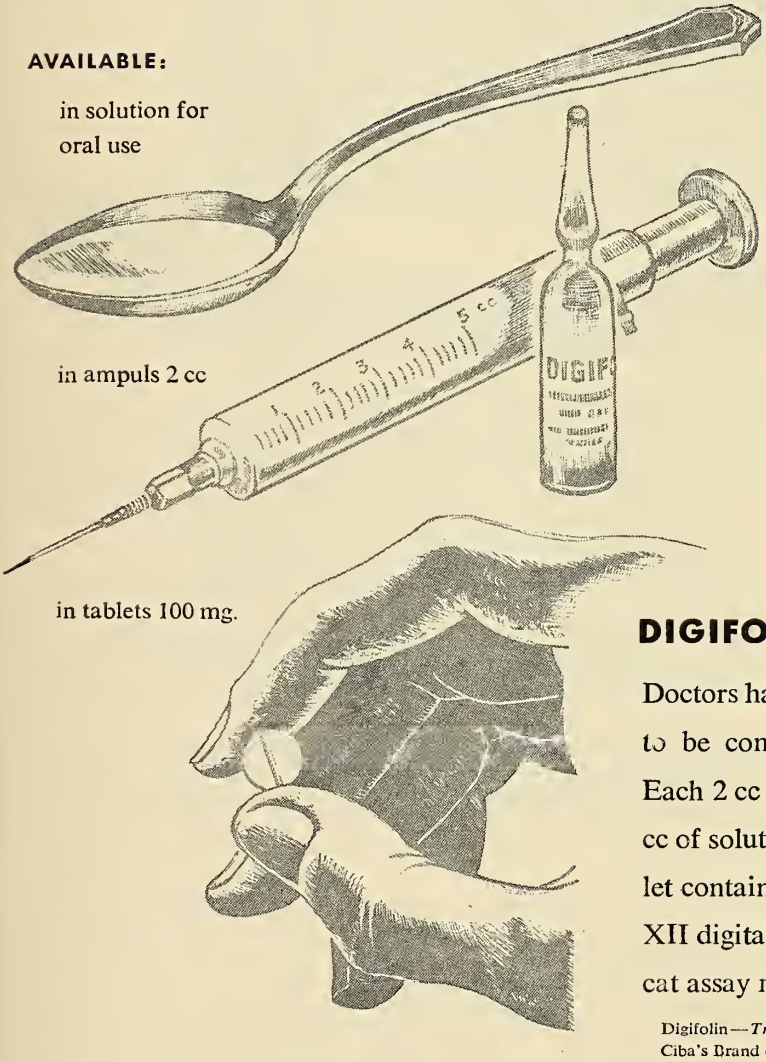
AVAILABLE:

in solution for
oral use

in ampuls 2 cc

in tablets 100 mg.



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Doctors have found Ciba's Digifolin to be constant through the years. Each 2 cc of ampul solution, each 1 cc of solution for oral use, each tablet contains the equivalent of 1 USP XII digitalis unit determined by the cat assay method.

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Also a representative list of glandular products and pharmaceuticals.

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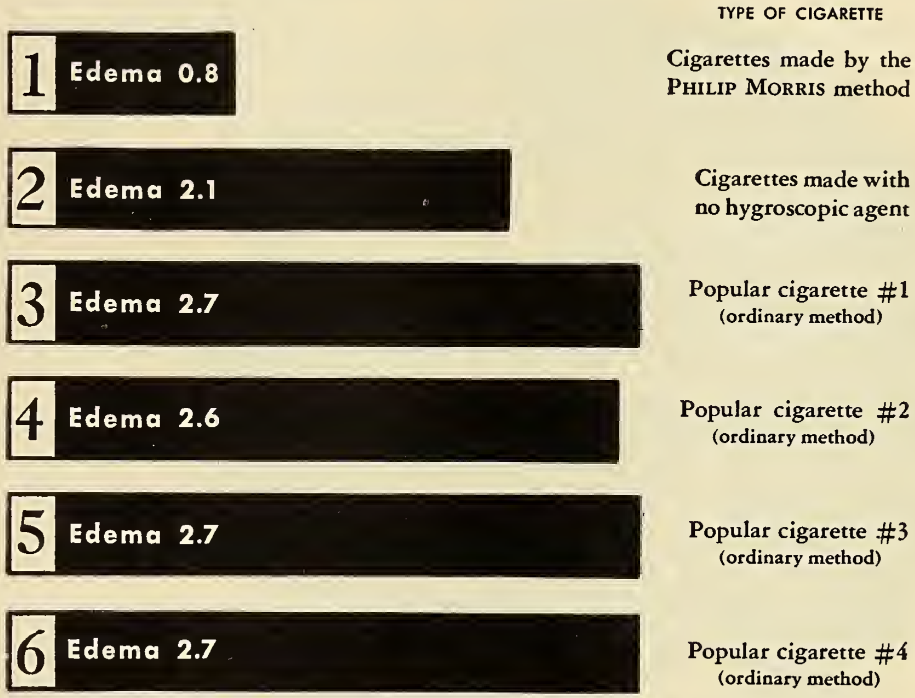
How irritation varies from *different* cigarettes

Tests made on rabbits' eyes reveal the influence of hygroscopic agents*



CONCLUSION:* Results show that regardless of blend of tobacco, flavoring materials, or method of manufacture, the irritation produced by all ordinary cigarettes is substantially the same, and measurably greater than that caused by PHILIP MORRIS.

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**N. Y. State Journ. Med. 35 No. 11,590 **Laryngoscope 1935, XLV, No. 2, 149-154*

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TRADE MARK REG. U.S. PAT. OFF. AND CANADA
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Packaged dry in hermetically sealed glass tubes in accordance with the new requirements of the U. S. Pharmacopœia.

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Severe menopausal depression, marked by apathy and psychomotor retardation, is frequently progressive. Hence, if not promptly and effectively treated, it may seriously impair the patient's normal capacity for useful living.

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*Hinsie, Leland E.: The Person in the Body, an Introduction to Psychosomatic Medicine, New York, W.W. Norton & Co., 1945, p. 223.

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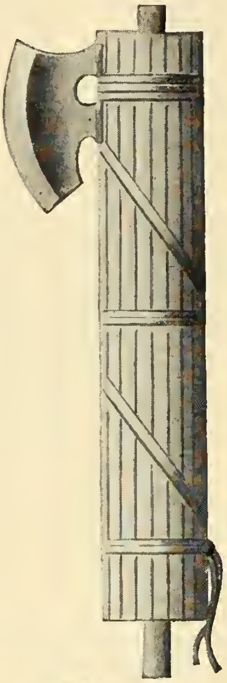

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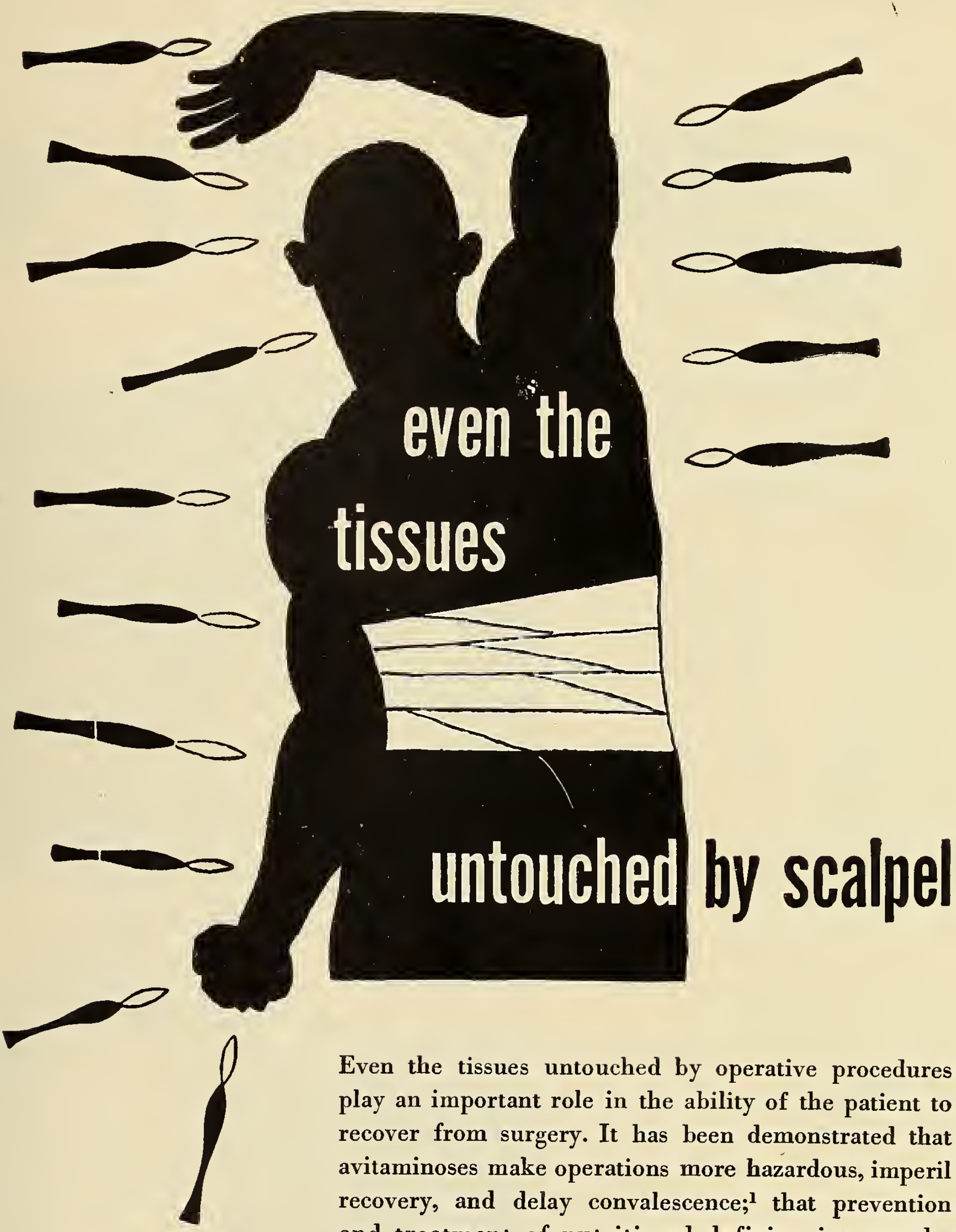

Even the tissues untouched by operative procedures play an important role in the ability of the patient to recover from surgery. It has been demonstrated that avitaminoses make operations more hazardous, imperil recovery, and delay convalescence;[1] that prevention and treatment of nutritional deficiencies may be "decisive"[2] in recovery following surgery. In the field of oral and parenteral vitamins, Upjohn offers a full range of highly potent, convenient to administer, economical vitamins.

[1] Virginia M. Monthly **72:**240 (June) 1945.
[2] Am. J. Surg. **54:**299 (April) 1942.

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FINE PHARMACEUTICALS SINCE 1886

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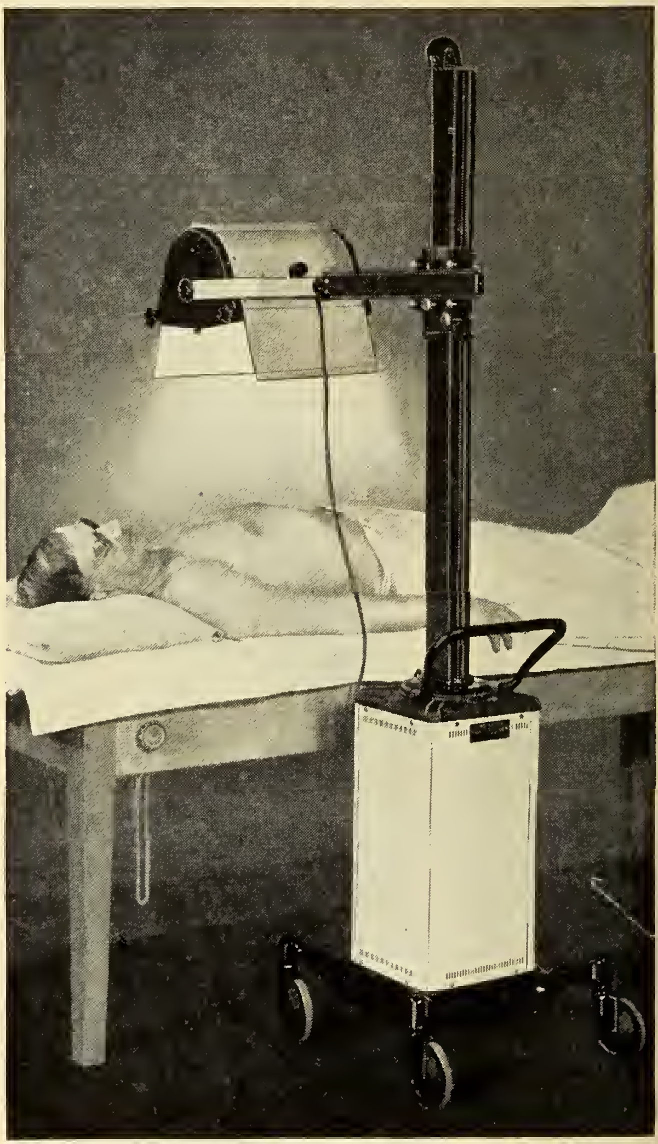
The G-E Model G Ultraviolet Lamp is designed for professional use in irradiating large areas of the body (general or systemic technique) and can also be effectively employed regionally.

The source of ultraviolet radiation is the reliable Uviarc—high pressure mercury quartz burner—whose emission characteristics cover the full range of therapeutic ultraviolet.

The following features are responsible for the steadily increasing preference expressed by medical men who use the Model G Ultraviolet Lamp in office, clinic and hospital.



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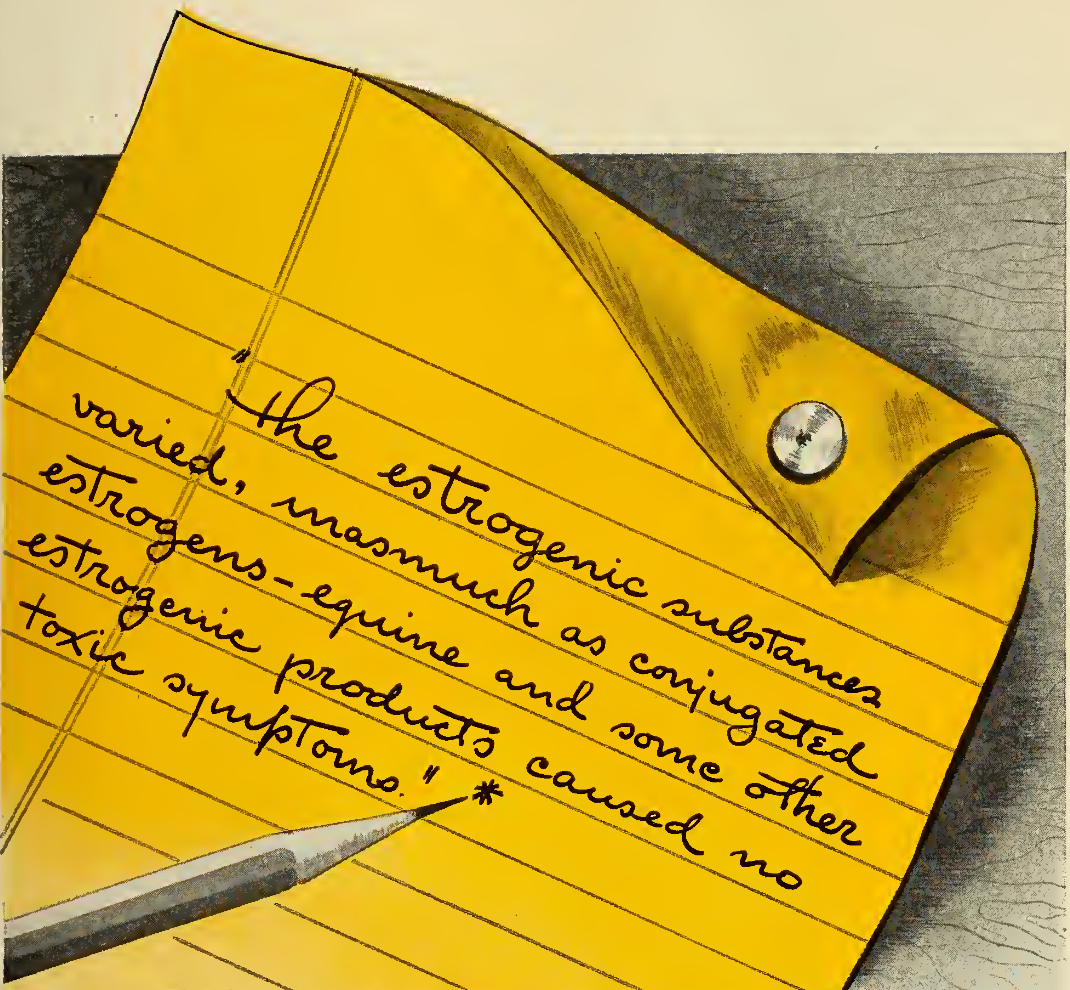
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*Harding, F. E.: Am. J. Obst. & Gynec., 51:660 (May) 1946

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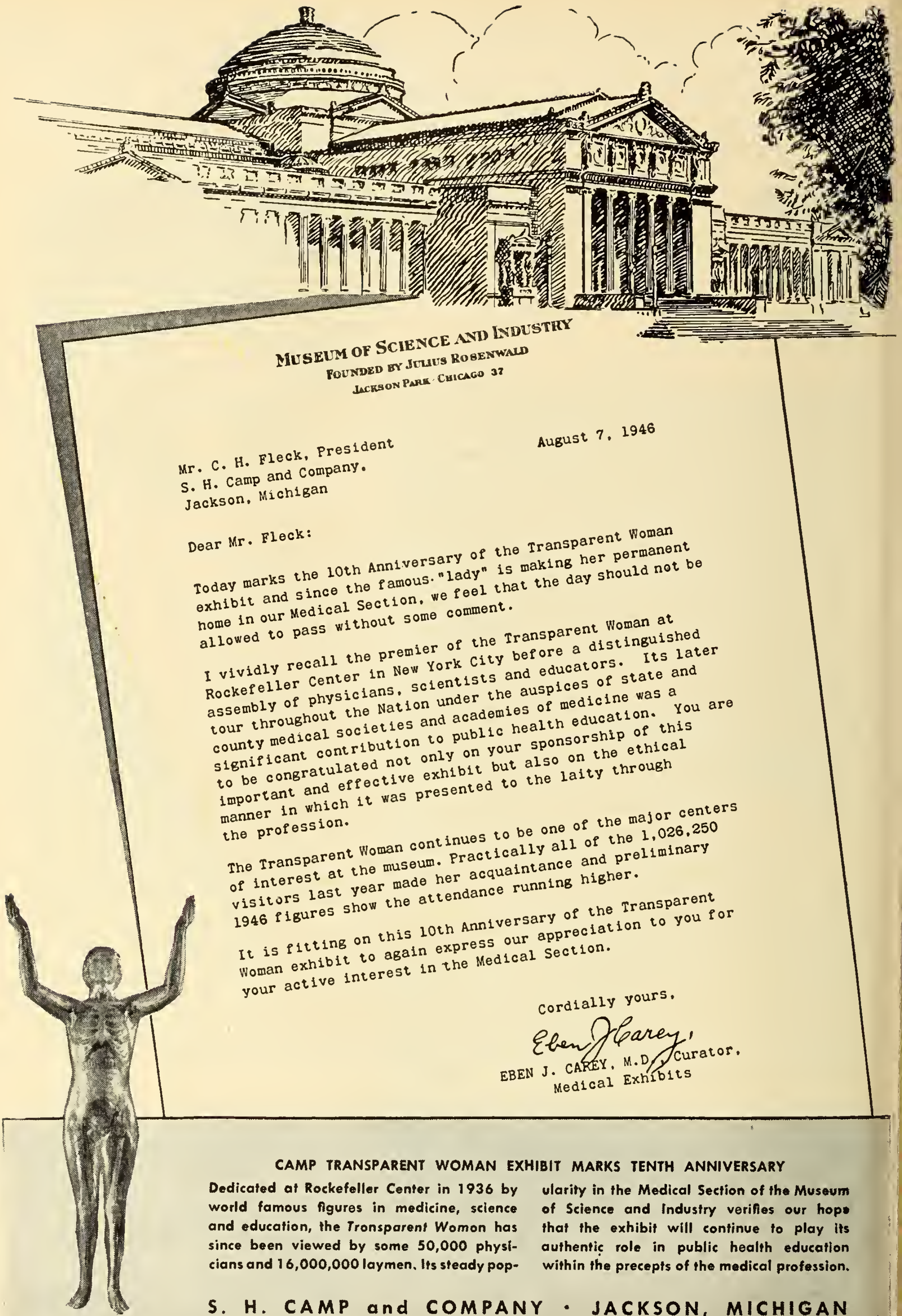

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Mr. C. H. Fleck, President
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Today marks the 10th Anniversary of the Transparent Woman exhibit and since the famous "lady" is making her permanent home in our Medical Section, we feel that the day should not be allowed to pass without some comment.

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It is fitting on this 10th Anniversary of the Transparent Woman exhibit to again express our appreciation to you for your active interest in the Medical Section.

Cordially yours,

Eben J Carey,
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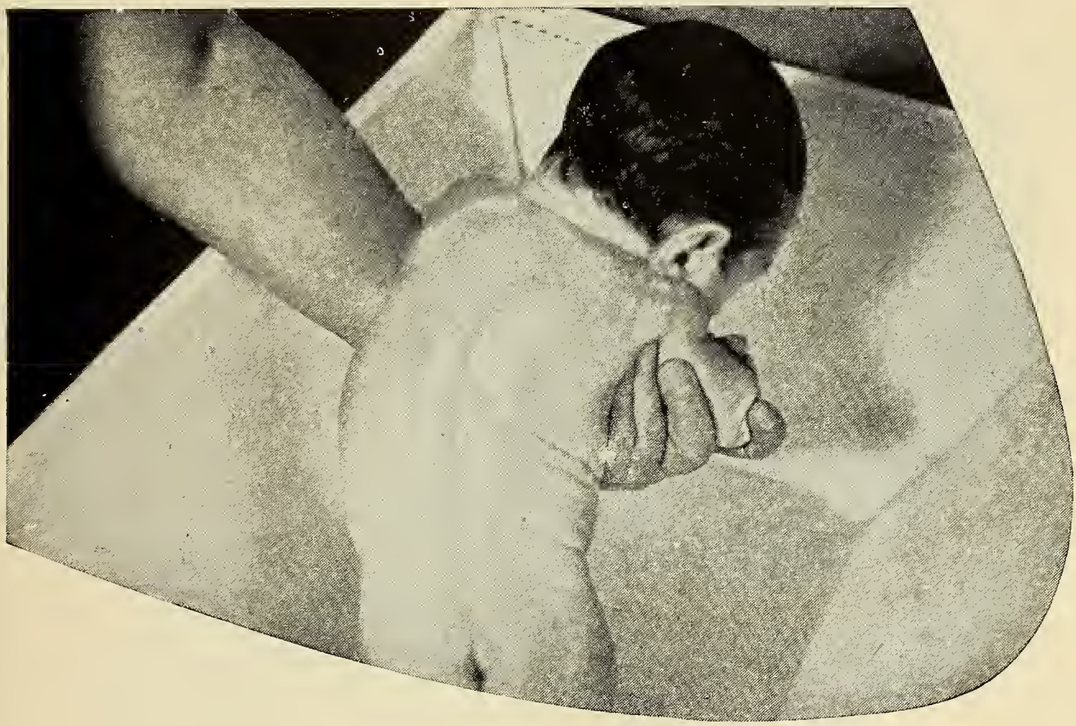

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 September, 1946 No. 9

CORONARY HEART DISEASE—THE OCCUPATIONAL DISEASE OF DOCTORS

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IN THE last decade of the 1700's, there appeared a little volume, the title of which was *The Art of Prolonging Life.* It was written by Christopher William Hufeland[9], at that time a professor of medicine at Jena. He was a kindly, wise, philosophical, Christian gentleman, a friend of Goethe and Schiller, and a friend of whoever his reader might be. There is in this book a great deal concerning the means of prolonging life, and the factors which shorten life, which might well be considered carefully today. Early in the volume, Hufeland gives an account of many men and women who have lived to an extreme old age. Henry Jenkins lived to be 159. His case was well proved by court records. John Parr was active and vigorous at 152. An account of his autopsy follows Harvey's dissertation on the circulation of the blood.

Hufeland takes care to state that—"The most extraordinary instances of longevity are to be found, however, only among those classes of mankind who, amidst bodily labor, and in the open air, lead a simple life agreeable to nature . . ." He was none too sanguine, however, in regard to doctors. "Physicians, who so abundantly dispense to others the means of health and life, ought to claim here a distinguished place. But unfortunately this is not the case. It may be said of them, in general: *Aliis inserviendo consumuntur; aliis mendendo moriuntur.* (In serving others they are consumed; in healing others they are destroyed.) At any rate, mortality is greater among practical physicians than perhaps among men of any other profession. They have the least opportunity of observing those prudential rules and precautions, for preserving health, which they lay down to others; and there are few employments in which the powers both of the body and mind are exposed to so much consumption as in this. Head and feet must be always exercised in common."

This was written 150 years ago, and as far as coronary heart disease is concerned, I think it applies today. I am perfectly aware that a great deal of statistical evidence has been published recently to show that doctors' lives are not shortened by their work. It is possible that the average length of life of the physician does not show any appreciable difference over the average length of life of men in other professions. It is perfectly true also, of course, that the average duration of life of the population as a whole has increased, due to decreased mortality in the earlier decades. The increase in heart disease, cancer, and other ills of later life, parallels the increase in life expectancy. Whether the extremes of age are as frequent as they were at the time of the Emperor Justinian census is another matter.

A great many variables which cannot be determined enter into all statistics, and they should not be taken too seriously. There may be a saving in mortality in the middle decades. In many ways, one might assume that a physician, aside from overwork, would have a longer life than those in other professions. The physician occupies

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Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

a favorable position as regards early diagnosis and treatment and as regards many physical hazards. He is immune to Christian Science and quackery.

In favor of coronary heart disease playing a prominent part in doctors' lives—and deaths—there is a noble array of witnesses: White[14], Musser[11], Willius[15], Smith[12], Kellogg[10], Carr[3], Falk[4], and others. In examining the clinical records of a comparatively equal number of physicians, bankers, lawyers, clergymen, laborers, and farmers, about 300 in each group, and comparing the incidence of coronary sclerosis in each group, Smith[12] found that "there were thirty-three instances of coronary sclerosis among the physicians, sixteen among the bankers, fourteen among the lawyers, fourteen among the clergymen, eight among the laborers, and eight among the farmers. The criteria for the diagnosis were the same in all the groups." The average age was about the same for all groups. Dr. Smith felt, too, that the error in diagnosis might be about the same in all groups. I am inclined to place considerable emphasis on his results which were from an observed group at the Mayo Clinic. One cannot be too sure about mortality statistics. Almost any sudden death is apt to be ascribed to coronary thrombosis. It saves any undue amount of cogitation and settles the whole question very easily.

If we turn to the obituary column of the Journal of the American Medical Association, we will get a very good comparative idea, although coronary thrombosis is probably over-diagnosed here also. Dr. Falk[4] has compiled the data from this column from 1930 to 1940. He finds that the average age of death increased two and one-half years. In that time, all cardiac deaths increased from 35 per cent to 41 per cent. It is doubtful that the slight increase in longevity could account for this latter increase. The percentage of deaths from coronary disease increased from 10 per cent to 46 per cent. Much of this increase is doubtless due to increased accuracy of diagnosis and nomenclature. If we take the last five years from 1935 to 1940, when error in diagnosis may have been less, the percentage increased from 28 per cent to 41 per cent. Figures of the Life Extension Institute show an increase in coronary deaths of 114 per cent over a similar period of seven years, as against the 240 per cent increase for physicians. One can make a great many allowances for a great many errors and still have a difficult time reconciling the percentages of 114 per cent and 240 per cent. The figures for 1944 show a total of about 43 per cent of deaths due to heart disease and about 22 per cent due to coronary disease. The figures for 1945 are essentially the same. Unfortunately for my thesis, however, these figures, 43 per cent and 22 per cent, are approximately the same as the figures for policyholders of the Northwestern Mutual Life Insurance Company, in which all occupations are represented. It is all very inconclusive, and if one were a lawyer, one could argue a very good case either way.

However inconclusive these figures may be, and whatever you may think about them, the fact remains that too many doctors have some manifestation of coronary heart disease, either coronary insufficiency or coronary thrombosis. It seems that we may be very sure that at least two out of five die of heart disease and that one of the two dies of coronary heart disease. A large number of those with coronary insufficiency and angina pectoris, eventually die of coronary thrombosis. Also, in any form of heart disease, impairment of the coronary blood supply to the myocardium is almost invariably a contributory factor, especially if there is myocardial hypertrophy. Now, even if only one doctor in five does die of coronary heart disease, most of us would prefer to be included in the statistics of those who do not die of heart disease and who do not in any way suffer from it. I am sure that none of us is in any hurry to join the heavenly choir.

The health and welfare of the doctor are menaced in two ways as regards coronary disease—by coronary occlusion, and by a coronary insufficiency, with or without anginal pain. The coronary occlusion is usually due to coronary thrombosis, but may be due to other, less frequent causes. Most cases of occlusion are due to "acts of God" which we cannot foresee and have not learned to avoid. But there are many cases of coronary occlusion, especially among physicians, in which I am not so sure but that the patient should share some part of the responsibility with the Lord.

The occurrence of coronary thrombosis in those working under high degrees of stress and strain and anxiety, with inadequate rest, and poorly arranged hours of work, is too frequent in the experience of each of us not to be of significance. Brief episodes of increased nervous strain and anxiety seem also to play a part. Hochrein long ago called attention to the part played by nervous influences in coronary thrombosis. To quote Smith again, "It has long been recognized that stress, strain, intensity of work and mental worries are factors in the production of coronary sclerosis. A physician's schooling is long and intensive compared with that of the average banker and businessman. Undoubtedly a doctor has used up a great deal of nervous energy by the time he has finished school. Secondly, the nature of a physician's work is much more strenuous, and he has not only the responsibility of health, but oftentimes of life itself in his hands."

The occurrence of coronary thrombosis in many ways parallels the occurrence of coronary insufficiency and angina pectoris. The age incidence is the same in each. The curve starts to rise early in life. It reaches its peak at about sixty years and, in the opinion of some, declines from then on, even though the arteries continue to show progressive degenerative changes. Part of the falling off is due to the elimination of some potential cases by death. Others find that the curve continues to rise with age. von Neusser[13], long ago, at a time when angina pectoris and coronary thrombosis were not differentiated, commented on the decreased incidence of angina pectoris with old age. He ascribed this to the increased degree of arteriosclerosis which might inhibit vasomotor changes in the arteries. Hufeland observed that the physician who "has luckily passed his time of probation, may become an old man. A striking example of this is afforded by our predecessor, Hippocrates, who lived to the age of 104, but he passed more of his time in small villages and in the country, than in great cities."

If we measure the activity of the vagus by the degree of response to carotid sinus pressure, we find here also that the curve begins to rise early in life and reaches a peak at about sixty years, and then apparently declines. We are probably not yet entirely conscious of the part which the autonomic nervous system may play in our body mechanism. We are not sure but what nervous stimuli may alter our coagulation time, and we have reason for thinking that they do. It could be supposed by some of the more imaginative, of whom I am one, that decreased clotting time, with or without vasomotor changes, might result in thromboses in vessels whose walls are already predisposed, and we know that predisposing vascular changes in the coronaries occur early.

All of this, of course, is largely speculative as regards coronary thrombosis, but to my mind it does not seem to be too unreasonable speculation. When we turn to angina pectoris, we are on more sure ground, for there we have a century and a half of recorded observation of the effect upon the coronaries of meals, breathing cold air, and of the emotions, and in addition we have laboratory confirmation of some of these effects. As Hirschfelder[7] said, anginal pain may be incited by any emotion except pity.

There is, of course, no question in regard to the part played by organic changes in the vessel walls in coronary insufficiency, or by congenital anomalies of the coronary arteries. Myocardial hypertrophy from valvular lesions or other causes may impose a greater load upon the coronary circulation. Here, so far, the physician is on common ground with those in other occupations. There is little chance of his occupation of itself inducing structural changes in the arteries. He may be the type who is more prone to coronary disease, or he may be the type who is less prone, but from there on, I do not believe that the physician and those in other occupations are on common ground. The effect of various nervous stimuli inducing clinical evidence of coronary insufficiency, or of angina pectoris, has been the source of constant comment, since Heberden's[6] first account.

I shall not attempt even a brief review of all the evidence indicating the effect of nervous influences upon coronary insufficiency. The evidence was enough to lead many earlier writers to regard angina pectoris as a purely nervous disorder, or to lead others to speak of "true" and "false" angina. Huchard[8] wrote of true angina and of reflex and toxic angina. We have good reason for thinking that angina pectoris may result from vasomotor influences not only in hearts with damaged vessels, but in those whose vessels are normal for the age. The presence of anatomical changes in the coronaries at autopsy assumes less significance when we remember that at forty-five most of us have definite advanced changes, and when we realize what a large number of individuals with very arteriosclerotic coronaries live to a very comfortable, extreme old age, without a symptom of coronary disease.

There are few of us so fortunate, or so rugged, as not to have had personal experience regarding effect of fatigue, or worry, or emotion on gastrointestinal motility and secretion. We only need our own experience to tell us that with fatigue comes a lowering of the threshold to autonomic stimuli, and an overresponse to such stimuli. A little incident, having no effect when we are rested, may have a great effect when we are tired or under emotional stress.

Evidence of coronary insufficiency will result if effort causes a greater demand for blood to the heart muscle than damaged arteries can supply. Vasomotor narrowing of the coronary vessel will cause the same disproportion between demand and supply and will again result in coronary insufficiency. Increased vasoconstrictive tone, or decreased vasodilator tone may also render the blood supply to the heart muscle insufficient.

The more frequent occurrence of anginal pain after meals has been noted since Heberden. Coronary deaths after meals are not infrequent. Part of this is due to the increased circulatory demands after meals, but not all. In the experimental animal, if the stomach, the esophagus, or hiatal orifice are distended, or if the free abdominal cavity is distended with air, there is a marked decrease in coronary flow which can be measured (Gilbert[5]). This does not occur if the vagi are sectioned or if atropine is administered. Clinically, if patients subject to angina of effort, are asked to breathe an oxygen-poor mixture, the pain comes on sooner after meals. It does not do this if atropine is administered. In some cases, the pain may occur after a longer interval than normal after atropine, even with the meal, because of the decrease in vasoconstrictor tone due to the atropine.

Hiatus hernia is a frequent cause of reflex anginal pain. Hiatus hernia is most frequently due to increased intra-abdominal pressure which can be obviated by moderate attention to diet, and especially by a more moderate use of concentrated carbohydrates in the form of alcoholic beverages. As Dr. White observed, many doctors are too fat, and he speaks of a "Smithfield ham and Lynnhaven oyster doctor" friend of his, who got into serious trouble at sixty. But hiatus hernia itself may also result from a shortening of the esophageal fibers and traction of the stomach upwards by a vago-vagal reflex. Here again, nervous factors are valent. Gall-bladder disease is a frequent source of vago vagal reflexes affecting the coronaries, as are esophageal diverticula or diverticula of the duodenum. These sources of trouble are much more potent under the same nervous conditions of which we have spoken, and are decreased or eliminated by atropine, or belladonna and phenobarbital, but best of all by rest.

Other sources of reflex stimulation may be connected with the pleura or bronchi, and it is a question whether part of the effect of smoking is not due to bronchial irritation.

The occurrence of coronary insufficiency upon breathing cold air through the nose may result in anginal pain, or in pulmonary edema in some cases of organic heart disease. This reflex decrease in flow can also be demonstrated in the experimental animal. It is eliminated only in part by atropine, but a part of the effect is due to a decrease in sympathetic tone. Another reflex shown by Anrep[1] is the vasoconstriction resulting from increased intracephalic pressure when the blood pressure passes a critical level. And this again, has been shown to be vagal.

I have gone into these reflexes in some detail because in these cases we have confirmatory experimental evidence of the part played by nervous stimuli. As I have said before, they are more prone to occur under conditions of chronic fatigue and stress and anxiety. Under such conditions they are more apt to occur with the tired and overworked doctor, in which, as Hufeland says, the "power of both body and mind are subject to so much consumption" and whose "head and feet must exercise in common." Part of this is unavoidable. Much of it is avoidable, and the physician should remember that the "facts of life" apply also to him.

Such reflexes may produce sufficient vasomotor changes to cause symptoms in a heart quite normal for the age. They assume much more serious proportions in a heart whose vessels are already damaged and insufficient, and in the presence of valvular lesions and hypertrophy.

Another point to be kept in mind is that such episodes of recurring insufficiency oft repeated or prolonged, may result in permanent myocardial damage. This was shown experimentally at the Banting Institute when the vagus in the dog was stimulated daily over long periods of time. Blumgart[2] has shown that even very short periods of decreased blood supply to the heart muscle may cause histological changes. Such episodes are to be avoided, even by the doctor. He has no more business eating a hurried or too ample meal and then getting right up and going to work than has his patient.

I assume that no doctor will be up and at work when he has sufficient anemia to interfere with the blood supply to the heart. And I wish that I could assume that he is watching his urine and blood sugar, and that he is being careful about a hypoglycemia if he is using insulin. Also, aside from diabetes, blood sugar should be watched if there is any anginal pain or coronary insufficiency between meals. Even with a normal fasting blood sugar, a hard afternoon's work may result in hypoglycemia.

I am loath to mention so delicate a subject, but the fact remains that smoking may in some people result in coronary vasoconstriction, and even very moderate smoking in some people. The fact that some chronic smokers do not ever have symptoms, does not alter the fact that some do. And my audience might give *that* a little soul-searching thought. Says A. T. Todd: "Not for nothing is coronary thrombosis called the 'surgeon's disease.' Half of his working day, the surgeon stands in a vitiated atmosphere, 'holding his breath' at that, and the rest of the day in his car, inhaling his own cigarette smoke."

I am not going to great lengths as to advice. The moral of all this is plain. The advice can be summed up as follows: Do as you advise others to do.

I am convinced that people overworking, under nervous tension, and doctors especially, are more prone to coronary heart disease than others. I am convinced too, that part of it at least can be avoided, by following the same "prudential rules" which the doctors lay down for their patients. They should seek what Hufeland calls the *extensive* life, in contradistinction to the *intensive* life, by being moderate in all things, food, work, and play. As Dr. George Palmer used to advise, no one should dash through life; rather, as far as is compatible with duty, he should quietly and thoughtfully saunter through life.

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SECRETARY OF WAR APPOINTS MEDICAL ADVISORY COMMITTEE

Secretary of War Robert P. Patterson recently announced appointment of a medical advisory committee to the Secretary of War, to maintain and foster close relations between civilian and Army medicine, and to enable the Army to receive advice on Army medical organization and policies from leaders in civilian medicine.

Members of the new committee are: Dr. Edward D. Churchill of Boston, Chairman; Dr. Elliott Cutler, Moseley Professor of Surgery at Harvard University; Dr. Michael DeBakey of the Tulane University Medical School; Dr. Eli Ginsberg of Columbia University; Dr. William C. Menninger, Director of the Menninger Clinic, Topeka, Kansas; Dr. Hugh J. Morgan, Professor of Medicine, Vanderbilt University Medical School, and Dr. Maurice C. Pincoffs, Professor of Medicine, University of Maryland.

All members of the committee served with the Medical Department of the Army during the war, either as officers or in a civilian capacity, and are intimately familiar with Army medicine. Dr. Churchill, the chairman, was the Army's consultant in surgery in the Mediterranean Theater. He is Professor of Surgery at Harvard Medical School and President of the American Surgical Association.

During the war, more than 95 per cent of Army Doctors were drawn from Civilian medicine. Most of these, except recent graduates of the Army Specialized Training Program, have been released from the Army and have returned to their civilian practices.

Major General Norman T. Kirk, Surgeon General of the Army, previously announced a policy under which distinguished civilian doctors will serve as consultants in their respective specialties in Army general hospitals. —*News Notes*—Office of the Surgeon General, August 31, 1946.

CORONARY HEART DISEASE; PROGNOSIS AND LIFE ADAPTATION

ARLIE R. BARNES, M.D.
Rochester, Minnesota

IN ANY discussion on the prognosis in cases of heart disease associated with insufficiency of the coronary circulation, it might as well be admitted at the outset that the length of time that a given patient will survive an attack of acute myocardial infarction or the onset of angina pectoris is not known. Something is known about the average survival time of a large number of patients but this information does not provide an answer to the question of survival of the individual patient. Every patient presents an individual problem and his life expectancy is determined by many variable factors, some of which are recognizable and predictable and others of which are not. I am reminded of Hutchison's remark, "in medicine there abideth faith, hope and charity: We have diagnosis which is a matter of faith, prognosis which is a question of hope, and treatment which too often is an affair of charity."

Immediate Prognosis in Acute Myocardial Infarction

About 20 to 25 per cent of the patients who have an attack of acute myocardial infarction will succumb in their first attack. The severity or duration of the pain matters little. On the other hand, if the pulse pressure is less than 20 mm. of mercury or if the systolic blood pressure falls to 80 mm. of mercury or less, the prospect of survival is diminished.[3] Leukocyte counts of more than 15,000 per cubic millimeter of blood and temperatures of 103°F. or more give an unfavorable outlook. Heart rates of 120 or more per minute, frequent ventricular extrasystoles, auricular fibrillation and varying degrees of conduction disturbances seriously diminish the chance of survival. Dyspnea must be viewed with apprehension; the greater its severity the more grave the prognosis. The chance of survival diminishes progressively with advancing age. Since, on the average, acute myocardial infarction occurs later in life in women than in men and since hypertension is more prevalent in women, the immediate mortality is greater in women. In both sexes hypertension and its concomitant cardiac enlargement leave the outcome less hopeful. It is of no consequence whether the region of infarction involves the anterior or posterior portion of the left ventricle. In general, if a patient who previously had normal blood pressure and a heart of normal size maintains a good level of blood pressure, a moderate elevation of temperature and of the leukocyte count, and does not have tachycardia, arrhythmia or disturbances of conduction in an attack of acute myocardial infarction, his chances of recovery are excellent.

Ultimate Prognosis of Acute Myocardial Infarction

There are no satisfactory statistics bearing on the life expectancy of patients after the first attack of acute myocardial infarction because in most series of patients studied there are many who still survive. Here again the outcome is tempered by many factors. The younger the patient is at the time of the attack, the better the prospect for long survival. The duration of life is distinctly less for women than for men. The absence of subsequent acute myocardial infarction or of congestive heart failure lengthens the span of life. A similar favorable influence is the lack of hypertension or of cardiac enlargement.

Perhaps the best picture of survival is conveyed by 278 patients followed by Conner and Holt. At the end of one year after the first attack 75 per cent of the patients were alive, at two years 56 per cent, at three years 42 per cent, at five years 21 per cent and at ten years 3.4 per cent were alive. The degree of recovery is revealed by Levine's study[4] which indicated that 30 per cent of patients returned to essentially full duty for an appreciable period of time and 45 per cent to partial duty. These figures are no solace to the patient and do not belong in his possession since they deal with averages. Physicians see many patients who exceed the average life expectancy but have no way of knowing whether a particular patient will fall in that coveted group. As Levine has stated, physicians owe it to these patients to give a guarded but hopeful prognosis.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota. Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

Prognosis in Angina Pectoris

More satisfactory data are available on the life expectancy of patients with angina pectoris and, on the whole, it is much more hopeful than was believed formerly. White, Bland and Miskall made a study of 497 patients who had angina pectoris. Their observations were made over a period of twenty-three years in some cases. Fifty-two of the patients were still alive at the time the study was reported. The patients who died lived on the average just less than eight years. The average duration of life of the patients who had angina and who were still living was 18.4 years.

Parker and associates found that slightly more than half their patients were alive five years after the diagnosis of angina pectoris was made at the Mayo Clinic. The survival curve for the patients after onset of angina pectoris in their series as compared to the survival curve for the normal population of same age and sex indicates a decided decrease of the life expectancy of a patient with angina pectoris.

At ten years following onset of angina only forty-two persons out of a hundred had survived as compared with seventy-five from the normal population. At twenty years the respective figures were fifteen and thirty-nine. Cardiac hypertrophy, hypertension, myocardial infarction, either preceding or subsequent to the onset of angina pectoris, congestive failure and significant changes in the T or Q waves or disturbances of cardiac conduction lead to a decline of the patient's prospect of long survival.

Here again a definite prediction of the duration of life in a given case is hazardous even in terms of averages. But the length of survival is heartening enough so that the wise physician will adopt an optimistic attitude. He will seek to enlist the patient's co-operation because of the prospect that his life expectancy is linked with the completeness with which he adopts a sensible course of living.

Life Adaptation for Patients Who Have Recovered from Acute Myocardial Infarction

In the previous discussion it is apparent that no definite knowledge is available concerning how long a specific patient may survive after acute myocardial infarction. But it is true, nevertheless, that some patients survive for many years, and it is always possible that the patient at hand may have that fortunate outlook. It is best, therefore, to be optimistic in discussions with patients. Mental reservations about life expectancy should be given to the relatives of the patient rather than given to the patient himself. Exceptions to this rule may be necessary in instances in which the patient contemplates some new and formidable undertaking.

It is well for the patient to know that a vessel of the heart has been closed and that his recovery denotes that nature has provided his heart with detours of circulation, a process that may be assumed to continue in the years to come. He should understand that the object of the early restrictions imposed is to provide adequate time for the full development of this collateral circulation.

The duration and degree of restriction are a matter of personal opinion and I know of no controlled studies that indicate the optimal requirements. Certainly all physicians can agree that the patient should observe the greatest care for at least three months after acute coronary occlusion. It is in the program after that time that practices diverge. For my own part, I am convinced that much is gained if the patient lives guardedly for several months longer. I am inclined to think of the convalescence of these patients much as that of a patient who has pulmonary tuberculosis. In the presence of the latter the physician does not hesitate to modify the patient's way of living for many months and to teach him how to lead a protected life henceforth.

In the first year after coronary occlusion, walking in moderation is permissible provided angina pectoris is not produced thereby. The injunction against climbing stairs has always seemed unnecessary to me if it is tolerated without pain and provided it is not done hurriedly. But these patients should secure much more rest than the average patient. This can be provided in the first year if they spend ten hours in bed at night and rest two hours in the daytime, one hour of which should follow their noonday meal. The question of allowing some work at the office must be decided on an individual basis, taking into account the nature of the duties involved and the temperament of the individual. For intensive individuals who face perplexing situations it is much better to postpone business responsibility many months and often for a year or more. Many of these patients have carried their nervous tension almost to the breaking point at the time of their seizure. They are in grave need of a fallow season in order that their nervous organization and their judgment may regain a level keel. They must learn that the tempo and demands of an ambitious life are incompatible with a maximal duration of survival. In short, they must become acquainted and enamored with a new and luxurious existence embodied in the word "tranquillity."

The quantity, not the quality, of the diet is important. Reduction of weight is important if the patient is much above his normal weight. Patients should be warned to beware of excessively large meals and particularly to guard against overexertion following a full meal. Smaller and more frequent meals are preferable. Smoking preferably is forbidden but, if allowed only in the greatest moderation. Alcohol is not contraindicated if used judiciously and there are many who believe that a cocktail before dinner has its usefulness, particularly if it induces a release from nervous tension.

Life Adaptation for Patients Who Have Angina Pectoris

Since we know that many patients who have angina pectoris already have suffered myocardial infarction, with or without coronary occlusion, it follows that much of the preceding program can be applied to them. The program of adjustment for these patients must include the physical, mental and metabolic aspects of their existence.

The first injunction to patients with angina pectoris should be that they restrict their exertion within the limits of the production of anginal pain. Attacks of angina will not be looked on too lightly if the physician recalls the chronic and perhaps insular infarction revealed at necropsy in the absence of coronary occlusion, or the fact that many patients with angina pectoris have had chronic closure of one or more vessels. Patients will be assisted materially if they are warned that exercise soon after a meal is particularly prone to result in anginal pain. If pain is produced by defecation or by a bath, it often may be forestalled if the patient takes a tablet of nitroglycerin prior to those exertions. Their liability to pain often seems reduced if they take ¼ grain (0.016 gm.) of phenobarbital four times daily and, possibly so, if they take one of the xanthine drugs in an appropriate amount. Many patients can undergo exertion in a warm climate that simply cannot be tolerated in a cold climate.

On the mental side, patients should strive to achieve nervous and muscular relaxation. To use Stevenson's phrase, they must "sit loosely in the saddle." They should learn not to hurry and for that purpose their hours of responsibility should be shortened materially. They must forego the luxury of short tempers. They must remain unruffled in the face of aggravations. Excitement should be avoided. Far too many men die of their coronary disease in exciting moments at a football game or at a boxing match. A noonday siesta is an indispensable boon. Relaxing vacations spent in fishing, photography or similar activities, particularly if pursued in mild climates, are of great worth.

The same injunctions about food, drink and tobacco, which were suggested for patients after acute myocardial infarction, apply to patients with angina pectoris. If the value for blood cholesterol and blood fats are high, if seems worth while to instruct the patient in a diet low in animal fat, though it must be admitted that the relation of high blood fats to coronary sclerosis is not known precisely. It must be added that there is no certainty that in any given case excessive blood fats can be reduced satisfactorily by diet.

There remain to be considered certain patients who have angina pectoris on the slightest provocation or at rest in bed. In some instances this situation is improved greatly if the patient has one month of complete rest in bed. This program may be assisted in some instances by proper sedation combined with the intravenous administration of aminophylline two or three times daily.

Finally, a word must be said about those patients whose mild symptoms of angina pectoris suddenly become more severe or frequent, and about those whose anginal syndrome suddenly reappears after it has been absent for a considerable period after acute coronary occlusion. Such situations suggest strongly that one or more coronary branches have been closed or that closure is imminent. Under such circumstances it is safest to institute a program of several weeks of rest in bed not unlike that ordered for patients who have suffered from an acute myocardial infarction.

Prevention of Disease of the Coronary Arteries

The people clamor for guidance to enable them o escape the development of disease of the cor- nary arteries but it is by no means certain that hey can, or will, make the adaptations in living hat appear to be required. As physicians we are ot too certain what adjustments are demanded. There is undoubted actuarial evidence that obesity hortens the span of life. There is ample evidence hat obesity predisposes to diabetes mellitus as vell as increases its severity and it is well known hat diabetes mellitus accentuates the development f arterial degeneration. Several studies have ndicated a definite reduction of life expectancy n those who smoke excessively and experience ndicates that much of this increased mortality esults from the effects of coronary sclerosis. There is much to suggest that the more or less udden cessation of regular exercise when men each their third and fourth decades is unwise. On the other hand, indulgence in ultrastrenuous nd, especially, in unaccustomed exertion after the ge of forty may have tragic consequences for he heart.

It is difficult not to link the great incidence of oronary sclerosis in this country with our way - f life. We are a strenuous and restless people nd we do not achieve much tranquillity of living. But the tempo and demands of living in the last three decades do not lend themselves to easy adjustment. This is as true of nations as it is of individuals. The individual who decides to indulge himself in the luxurious attitude of "dolce farniente" is apt to find himself outdistanced. To ask people to give up their stress of living is like crying "Peace, peace, when there is no peace." When the social structure and ideals of our civilization will allow individuals to live leisurely and to survive, then we may anticipate some amelioration of coronary sclerosis insofar as it is related to the stress of living. Until then we must seek diligently such makeshifts of relaxation and leisurely living as our struggle for existence will permit.

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THE VIRAL ETIOLOGY OF CONGENITAL ANOMALIES

Evidence of a casual relationship between viral infec- ons in early pregnancy and congenital anomalies in the ffspring has been accumulating since Gregg[1], of Aus- ralia, reported in 1941 a high incidence of congenital ataract following maternal rubella. Since that report, pproximately 150 cases have been published in which ongenital cataract, cardiac malformation, cerebral dys- enesis, deaf-mutism, microphthalmos, biliary atresia, nd glomerulosclerosis have followed the occurrence of aternal rubella (and less frequently of measles and in- uenza), usually in the first two or three months of estation. The bulk of these reports were Australian, ome American, and a few British.

Recently, Conte, McCammon, and Christie[2] investigat- d, in Tennessee, 120 children with congenital defects nd found that only 4.2 per cent had a history of gesta- onal maternal rubella. Fox and Bortin[3] in three epi- emics occurring in Milwaukee between 1924 and 1944 ound only one anomalous infant among eleven preg- ancies complicated by rubella. These adverse reports dicate that the correlation of material rubella and ongenital defects is not a consistent one, despite the im- ression of some earlier authors who found an exceed- gly high positive correlation. Further studies by virol- gists, clinicians, and statisticians are necessary to answer the following questions: Why has the connection between virus disease and anomalies only recently been described? Is this a new disease? Why do more severe viral infections often leave the infant unharmed? Why is the incidence apparently different in different localities? Are the defects the result of a specific viral infection, or is the time of involvement relative to embryologic development of equal or greater importance?

The work of Warkany[4] showing an etiologic relationship between maternal diet and congenital anomalies in animals is pertinent to the present problem. Possibly, lesions similar to those he observed have confused some reports attributing anomalies to rubella. In any case, the fact that similar anomalies can be produced by widely different etiologic agents indicates a lack of specificity of these agents and suggests that the stage of embryologic development in which they act is the more important factor.

More knowledge is obviously necessary to validate the suggestion that abortion be performed as a Public Health measure in all cases of early pregnancy complicated by rubella.[5,6]—Editorial, *New York State J. Med.*, April 15, 1946.

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THE TREATMENT OF THE CORONARY EMERGENCY

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IT IS well now and then to take stock of what we can expect, and hope for, in the treatment of coronary emergencies. In the last few years tremendous advances have been made in this field, and conditions which were long thought to be beyond relief are now being treated with many encouraging results. Our interest in this disease has further been enhanced due to the increase in its frequency, an increase which has both been apparent and real, due partly to the greater frequency of the diagnosis and also to an absolute increase in the occurrence of the disease. With the added prevalence of the disease, emergency situations in coronary artery disease have assumed a role of major importance to all practitioners of medicine as well as to cardiologists.

Acute coronary artery disease has been divided by Masters, Jaffe, Dack and Grishman into "angina pectoris" or angina of effort, acute coronary insufficiency and coronary occlusion.[28] Coronary occlusion means sudden complete obstruction of a coronary artery, and may occur as a consequence of any of the following circumstances:[12] (1) thrombosis of a narrowed arteriosclerotic coronary vessel; (2) intramural hemorrhage in a coronary vessel producing closure, and (3) rupture of a subintimal lipoid abscess with plugging of the lumen. Acute coronary insufficiency, on the other hand, indicates necrosis or infarction of the myocardium without complete closure of a coronary artery. Pain and necrosis of the myocardium occurring as a result of severe or prolonged diminution in coronary flow without actual coronary closure is now an accepted fact. Angina of effort or "angina pectoris" represents a temporary insufficiency of the coronary flow, and differs from the more severe forms of coronary insufficiency and occlusion in that anatomic alterations do not occur in the cardiac muscle.

Any discussion of the management of the sudden attack would be incomplete without emphasizing the great importance of prompt and accurate recognition of the condition. Proper treatment presupposes accurate diagnosis. The occurrence of precordial pain in a patient places a responsibility on the physician to utilize every means at his disposal to determine carefully the cause of the pain and the extent of cardiac damage. The diagnosis of coronary artery disease, by and large, can be made with a high degree of accuracy and the nature and extent of the therapy should be governed by careful consideration of pertinent diagnostic facts.

Angina of Effort.—In the patients the classical picture includes the substernal pain with its radiation, its relation to effort, excitement, cold and eating. It is relieved by the short-acting nitrates and rest. Nitroglycerine can be used for the acute episodes, and aminophylline, theobromine, whiskey and other vasodilators can be given in an attempt to prevent more prolonged and continuous vasoconstriction. Much can be accomplished in these patients in re-education as to their activities, slowing down the speed of doing things, care about undue exertion, particularly in cold weather and after meals. Some patients will require medicinal aid in the way of sedatives as barbiturates or bromides to accomplish the slowing down. In that event, one should keep in mind the dangers of intoxications from these drugs. Lately such things as trichlorethylene, testosterone, nicotinic acid, and more recently cobra venom have been suggested as useful in the relief or prevention of anginal pain.[15,26,32] Their use, however, has not as yet been generally accepted and can be considered no more than experimental.

Myocardial Infarction. In these cases the clinical picture of prolonged pain, shock, gallop rhythm, impairment of the first heart sound, occasionally a precordial rub, a fall in blood pressure, fever, leukocytosis, and a rapid sedimentation rate, is well recognized. In treatment, the patient should be placed at absolute rest, and all the disturbing procedures that are not absolutely necessary are to be avoided. Sufficient amounts of morphine or other derivatives of opium should be given to assure relief of pain. The administration of morphine or papaverine hydrochloride by vein is often justified that the relief may be

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more prompt and complete. A procedure as suggested by Falk is that papaverine be given intravenously in doses of from ½ to 1 grain (0.03 to 0.06 gram). If the pain is not relieved, this can be followed with the slow and careful intravenous injections of 1/6 to ¼ grain (0.01 to 0.016 gram) of morphine diluted with 2 c.c. of sterile water.[12] When pulmonary congestion and cyanosis is present, continuous oxygen therapy should be instituted; such administration of oxygen frequently aids both the cyanosis and intractable pain.

If shock is present additional measures are often necessary to overcome profound collapse. Small doses of epinephrin and caffein are often helpful. One should remember, however, that epinephrin in large doses is a coronary constrictor and care must be exercised in its use. In severe collapse and dehydration the slow administration of small quantities of glucose by vein may be indicated. Smith suggests that the administration of 200 to 300 c.c. of hypertonic glucose to which 3¾ grains of aminophylline have been added is effective in alleviating shock and combating dyspnea.[31]

Manning, McEachern and Hall[27], as well as LeRoy and associates[20,21], working on dogs, have shown that occlusion of a coronary artery is often followed by a reflex spasm of the collateral coronary vessels. This spasm seems to arise through a nerve reflex in which the cardiosensory innervation is the afferent and the vagus the efferent pathway. Their experiments further suggest that this regional spasm produces an area of anoxemia and resultant infarction appreciably larger than that to be expected from necrosis of the muscle mass supplied by the particular vessel itself. According to LeRoy, this regional spasm also seemed to be the factor that produced ventricular fibrillation in susceptible individuals. Several observers who have been taking electrocardiograms at the moment of death have reported ventricular fibrillation as the terminal event.[33] Several drugs have been suggested for use in an attempt to limit regional vasoconstriction and prevent ventricular fibrillation. Lindner and Katz suggest the use of papaverine hydrochloride.[25] Their work showed that this opium alkaloid is not only a powerful coronary dilator, but also seems to prevent the occurrence of ventricular fibrillation in animals. LeRoy and his associates have shown that the administration of atropine in dogs in which the circumflex branch of the left coronary artery was ligated greatly reduced the mortality in these animals.[20,21] In a large group of animals the mortality after coronary ligation was 75 per cent, but when atropine was given intravenously the mortality after ligation was reduced to 35 per cent; when atropine sulfate and aminophylline were given together the mortality was only 33 per cent, and when aminophylline was given alone, the mortality was 56 per cent.

The effect of the xanthine preparations, such as aminophylline, theophylline and others have been the subject of variable reports. Fowler, Hurevitz and Smith reported that after ligation of the coronary arteries in dogs, the administration of aminophylline lessened the size of the resulting infarct and hastened its healing.[13] Gold, in similar circumstances, found no effect.[17] The use of the xanthines as a routine measure in myocardial infarction is a debatable question. In those instances in which there is a complicating congestive failure, administration of aminophylline is beneficial.

Further, Borg observed that quinidine sulfate used in patients with degenerative heart disease greatly reduced the incidence of sudden death.[8] Several writers have advocated its use prophylactically in cases of myocardial infarction to prevent ventricular fibrillation.[12,32] Quinidine is also useful both early and late in the attack for its tendency to prevent and control other forms of cardiac arrhythmia such as ventricular tachycardia and auricular fibrillation. Quinidine, however, is contraindicated in the presence of conduction defects.

Among the causes of sudden death, whether in the early period of coronary attack or during the period of recovery, in addition to ventricular fibrillation are such things as myocardial failure and pulmonary embolism. Woods and Barnes have pointed out that pulmonary embolism is not an infrequent cause of death in those dying after coronary infarction.[35] In these instances, the embolus originates from a thrombus which arises in the iliac veins. After coronary infarction, conditions are favorable for the development of such iliac thrombosis due to the lowered blood pressure and prolonged periods of bed rest. For this reason it would seem advisable in an attempt to prevent pulmonary embolism, to institute such measures as deep breathing and passive movements of the legs as early as reasonable, considering the condition of the patient.

As a preventative of thrombolic and embolic complications, the use of the anticoagulants may prove beneficial in cases of myocardial infarction. Although it has been shown that the anticoagulants, heparin and dicoumarol, can prevent intravascular thrombosis, the infrequency of premonitory signs precludes any important use of these drugs in the prophylaxis of thrombosis of the coronary arteries. Cotlove and Vorzimer recommend the use of dicourmarol in patients developing myocardial infarction of a severe degree in order to prevent mural thrombus formation, which in turn may result in embolism.[10] The drug should be used only where facilities for doing accurate prothrombin time daily are available. Proper evaluation of this procedure will depend on more experience than has been reported to date.

Another cause of death is myocardial failure, which is often accompanied by pulmonary edema and occasionally hepatic congestion. Indicated in the management of this complication are digitalis, adequate oxygen therapy and diuretics such as xanthine. Digitalis should never be used early in coronary occlusion, as it is thought to increase the danger of cardiac rupture during the period that the infarct remains soft. Mercurial diuretics should be used only after very careful consideration and evaluation of the risk attendant on rapid mobilization of fluids, which increases the load placed upon the heart.

The general nursing care of the patient is very important. Everything possible should be done to keep him comfortable. In this regard, it should be emphasized that the attitude of the physician and nurses should be such as to allay and not create anxiety. The diet should at first be liquid, and later low in calories and easily digested. Bed rest is imperative, and should be continued four to six weeks. During the acute phase of the attack the patient should be fed, and turned in bed by the nurse. Gradually the activity is increased through passive, then active movements in bed, sitting up in bed, and walking. Five or six months usually are necessary before the patient is allowed to go back to work. The period of convalescent care will be used as a period of reeducation, so that the patient may learn how to live under the limitations of his condition.

Summary and Conclusions

Acute coronary emergencies have been divided into (1) angina of effort; (2) acute coronary insufficiency; and (3) coronary occlusion.

The therapy of the acute attacks should take into account (1) the prompt relief of pain and anxiety; (2) the control or shock; (3) the problem of vasodilatation in an effort to limit the regional vasoconstriction and the occurrence of ventricular fibrillations; and (4) the problem of preventing complications during the period of recovery.

Various therapeutic agents and procedures directed at accomplishing these ends have been suggested.

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THE OUTLOOK FOR POSTWAR MEDICINE AS SEEN BY A RADIOLOGIST

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NEXT month will mark the twentieth anniversary of Russell Carman's passing. In that double decade many other men of high estate, among them Carman's distinguished patrons, the Mayos, have gone to join him. World-shaking events have occurred, for good or ill. The bloodiest and bitterest war of all time has been fought—a war that was ended by the atomic bomb, a lineal descendant of the rays with which Carman worked. Carman, American pioneer in the radiology of the digestive tract, American protagonist of screen examination of the alimentary canal, planned a practical and highly efficient technique, applied it with consummate skill and taught it to his pupils and fellow radiologists by precept and example. He was first to observe and record the signs of gastrojejunual ulcer. He knew the telltale tokens of peptic ulcer and gastric cancer as well as the most expert among us today—and he knew them twenty years ago.

As time rolls on and landmarks of the past fade into the distance, the radiologic world may forget the name of Carman, but it will always profit by what he did, for his work is now built into the foundation and frame of gastro-intestinal radiology. That is his monument—one that will endure even longer than the granite block that stands in silent respect before his tomb.

Although it was originally intended that the Russell D. Carman Memorial Lecture should deal with some phase of radiologic diagnosis, I thought you might prefer to join with me in considering the condition in which medicine has been left by the war and in trying to determine what lies ahead for our profession. It is not likely that we shall arrive at many settled conclusions but a little exercise of our foresight may strengthen that faculty and enable it to see farther and better at its next trial.

From history and experience we know full well that war brings vast political, social and economic changes during the conflict and after it has ceased. In peace, the state progresses slowly and without clear design. In war, the metabolism of the nation becomes accelerated and plainly purposeful; the genius of invention and improvement is stimulated and rapid advances are made under the stress of urgent need. At war's end, many of these advances are retained, expanded and adapted to peacetime use, and progress takes a long leap forward, although the process of adjustment inevitably raises new and puzzling problems. That sequence of events, affecting all our domestic activities, including the practice of medicine, is now in motion and the results may be momentous. So today I wish to cite certain facts, offer a few opinions and perhaps venture some mere guesses concerning salient aspects of the afterwar medical service that is now beginning to take shape. It is not my intention to give you unneeded instruction by forensic gavage; I hope only to think with you constructively about these matters, for most of them vitally affect the welfare of the public and ourselves.

That the quality of postwar medicine will surpass that of prewar days is certain and many reasons for the improvement are obvious. During the war chemotherapy made remarkable advances. Penicillin made its appearance, proved its extraordinary worth and directed attention to the therapeutic possibilities of other antibiotic agents. Preventive medicine made vast gains from the discovery of potent insecticides. New surgical techniques were devised and old ones improved. In plastic surgery, neurosurgery, and other fields of endeavor, notable progress was made. New instruments and appliances were invented. Virtually all branches of medicine made marked gains directly from the war or during it. Much of the progress, of course, was a natural resultant of long-existing forces, but the war hastened the advance.

Returning veterans of the medical corps are an important factor in assuring a superior quality of civil medical practice. They are coming home with new skills, new confidence in the power of their art and new zeal to help mankind. They are coming back with a firm determination to give service at home equal to, or better than, that which they gave to the armed forces—a service unexcelled by any ever given in war.

Russell D. Carman Memorial Lecture presented before the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

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These medical veterans saw and experienced the very great advantage of working with representatives of the various specialties in the military hospitals. Many medical officers had been certified by one or another of the specialty boards. Others had been graduate students who had not completed their special courses but nevertheless were assigned to military duties in the branches in which they had been under instruction. Still others who merely showed an aptitude for, or a keen interest in, a certain field of medicine were given intensive courses of instruction in order to fit them for duty as assistants in that field. For example, the army, when faced with a serious shortage of radiologists, expanded the Army School of Roentgenology, originally located at Washington and later moved to Memphis, at which selected men were given preliminary training and then sent to the advanced school of military roentgenology here in Minnesota to complete their short courses. Incidentally, I may say here that as Chief Consultant in Radiology to the Surgeon General of the Army, I saw many of these brevet radiologists on duty in army hospitals, and almost without exception, they were doing excellent work. The army also established short, intensive courses in neurosurgery, anesthesiology, orthopedic surgery, neuropsychiatry and other fields, with similar success.

The efficiency resulting from specialization in the military medical services has made a deep impression on the returning medical officers, and a surprisingly large number of those not already fully qualified have avowed their intention to seek graduate training in order to fit themselves thoroughly for practice in their chosen specialties and to obtain certification by the appropriate specialty boards. This should go far toward allaying any apprehension that the aftermath of the first World War will be repeated and that there will be an influx of self-proclaimed but poorly trained specialists. In this connection I can state positively that The American Board of Radiology will not give its certificate to any applicant who cannot fully prove his competence. Time spent in military service will be considered in adjusting fulfillment of preliminary training requirements, but the candidate's knowledge nevertheless will be tested by the standard examination. Although I cannot pledge other specialty boards, I have no doubt that they will follow a similar course.

The rapid and vast expansion of specialization in recent times has been a striking and significant factor in the practice and progress of medicine. Since specialization represents division of labor, with concentration of effort in a limited field, it must be accepted as a natural and progressive step in the evolution of medical science and art. It was partly responsible for the great advance of American medicine just before the war. It was the basis on which the war medical services were organized and a prime reason for their efficiency. It has profoundly affected medical education and the quality, interrelations and distribution of medical service. And, because of its fast growth and far-reaching effects, specialization has produced new problems that require solution.

Twenty years ago, in Carman's day, there existed only two specialty boards; namely, The American Board of Ophthalmology (1916) and The American Board of Otolaryngology (1924). Few institutions offered systematic resident training. Radiology had not achieved full recognition and it was not until 1934, only twelve years ago, that The American Board of Radiology was formed. In that same year the Advisory Board for Medical Specialties, composed of representatives from the seven existing special boards and from organizations interested in graduate medical education, was organized, and orderly progress was established. Today there are fifteen specialty boards and an abundance of excellent facilities for graduate training. At present, more than 200 institutions have been approved for one to three years of residency training in radiology alone and there are more than 2,000 diplomates of the board. These facts and figures probably are fairly typical of, or at least not far from the average for, all specialties and they help to explain the great influence of specialization in medicine. While that influence has been highly beneficial as a whole, it also has disturbed temporarily the internal relations of the medical organism and thus has given rise to new complications.

Among disturbed relations to which specialization has contributed materially, the very considerable reduction in the proportion of general practitioners to specialists is of first importance. For example, Dr. William A. O'Brien is authority for the statement that of 250 new medical graduates recently interviewed, only one expected to enter general practice. To physicians that situation is, of course, not altogether surprising, for they know that the life of the average general practitioner is not enviable, especially in the rural communities where his services are most urgently needed. And yet no one who has thought about it at all can fail to realize that the general practitioner is the basic unit of the profession and indispensable as the first physician whom the civilian should consult and often the only one whom he need consult. Hospitals may never completely take the place of homes as refuges in time of illness and neither specialist nor group probably ever will be a satisfactory substitute for the family doctor.

Measures designed to make general practice more inviting include the proposal that it be given the status of a specialty, with requirements similar to those of other specialties. This would be fitting recognition of the manifold skills required of the general practitioner, who is expected to have a working knowledge of every branch of medicine. At its last meeting, the House of Delegates of the American Medical Association again recognized the importance of the general practitioner by creating a Section on General Practice and this may well be the first step toward the desired end. Better to prepare the young medical graduate for general practice, and to meet standards similar to those prescribed by existing specialties, it has been suggested that a prolonged rotating internship be required, together with a well-planned graduate course that would offer intensive training in essential fields. Thus, the general practitioner would learn the judicious use of special diagnostic and therapeutic aids and would be enabled to cultivate his domain more satisfactorily than he is now able to do. However, other and stronger measures will be required to increase the supply of general practitioners sufficiently to meet the demand.

Besides augmenting the shortage of general practitioners, the war has caused an absolute diminution of the total number of physicians available for peacetime service. During the war the armed forces obtained, almost exclusively by voluntary enlistment, approximately a third of the nation's physicians, including not only active practitioners but many graduate students. Medical students who clearly showed their competence were exempted from the draft but those who were unsuccessful in demonstrating their ability were inducted into active service. Premedical students were inducted unsparingly and thus, for four years, the primary reservoir from which the profession is recruited was greatly depleted. Now that the war has ended, thousands of physicians —perhaps two thirds of those who were in the armed forces—have been returned to civil life and hundreds of discharged medical and premedical students are now, or soon will be, in school as beneficiaries of the so-called GI Bill of Rights. On the other hand, a large number of medical officers will be retained in our greatly expanded peacetime army and navy; a large proportion of those discharged are taking refresher and graduate medical courses, mostly with the aim of becoming specialists; beginning premedical students have at least seven years of preparation ahead of them and selective service may continue to decimate the ranks of high school graduates who are planning to study medicine. The whole picture is so complex that it defies precise analysis but it is clear that for a time there will be a shortage of physicians. It is fairly certain, also, that the scarcity will be accentuated by an increased demand for medical service, for the population has increased substantially, the health consciousness of the public is constantly being stimulated by press and radio, and the people are more able than ever to pay for extraordinary, even luxurious, medical attention.

However, the mere number of physicians in practice is not a decisive index of the amount of medical service available to the public, for there are important modifying factors, such as the number and distribution of hospitals and medical centers, and the character and distribution of transportation and communication in localities concerned. Not all persons concerned fully realize that hospitals, besides offering comfort to the ill and injured, and convenience to physicians, also play a notable part in the economy and efficiency of medical care in the areas tributary to the individual hospitals. In much the same way that industrial plants make mass production possible, hospitals facilitate mass handling of patients and thus save time and effort of all physicians concerned, a significant consideration wherever there is a scarcity of medical personnel. Almost every hospital has special diagnostic services—in radiology and laboratory facilities, for example—and thus becomes a diagnostic center for the entire vicinity. This service is appreciated by physicians who do not have the equipment requisite for making special tests or the time or training necessary to make them. All the beneficial functions of hospitals have been enhanced in recent years by modern methods of transportation and communication, so that patients or specimens can be sent easily from outlying districts and any desired information can be returned quickly to the attending physician, thus adding to his efficiency and satisfaction.

Public interest in hospitals has been heightened by the war, and it is planned to build many of them. They are sponsored by churches, medical schools, associations of physicians and philanthropic organizations, not only in the large cities but also in towns and more scattered communities. (In many instances municipal aid will be forthcoming.) The extension of hospital facilities into regions where they were lacking before will be a boon to patients, will help to ease the burden of the general practitioner and will conserve medical man power. A bill now pending in congress would foster the building of hospitals by giving subsidies to them. The government has given subsidies for less noble purposes and a grant for hospitals can hardly be regarded as objectionable if it will be truly free and furnish no excuse for future governmental interference in administration of the institutions.

Associations of physicians, which is a logical outgrowth of specialization and has considerable influence on medical economy, was given impetus by the war. Many discharged medical officers, impressed by the efficiency of military hospitals organized on that basis, are no doubt planning to affiliate with an existing association at the first opportunity or help form a new one. Consequently, it may be anticipated that many new associations of physicians will be formed, not only in populous centers but also in areas where individual practitioners have found it difficult to furnish the character and amount of service needed.

Between the first and second world wars, medical education, both undergraduate and graduate, attained such excellence that on Pearl Harbor Day a great mass of remarkably well-trained physicians was at the disposal of the military forces. Then began a progressive deterioration of the entire educational system. Among factors responsible were the loss of teachers to the military forces, gradual reduction in the number of students, the forced adoption of the so-called accelerated program, by which schools and students were kept in continuous session, and the shortening of internships to a maximum of nine months. Graduate education suffered severely from the sharp reduction in the number of students and the establishment of quotas, with the requirement that, as far as possible, the quotas be filled with women, and with men physically unfit for military duty, regardless of mental capacity in either case. Many promising students were thus denied graduate training or were granted only a short period of instruction before being called into service. On the date of victory in Europe, medical education had reached its nadir for the period of the emergency.

A little later, with the unexpectedly early collapse of the enemy, the trend was suddenly reversed, essential teachers were released and forced and rapid demobilization brought back a flood of students—graduate, undergraduate and premedical—who returned to their classes and overwhelmed the weakened and unprepared institutions of medical instruction. The overcrowding and confusion are continuing with little abatement, especially in the graduate training centers, and the planned discharge by September of graduate students who were inducted into the navy only six months before will add to the disorder.

In view of the widespread belief that the nation inevitably will be involved again in war, we should begin now to prepare for the next one in order to render the greatest possible assistance to the war effort and to avoid a repetition of injuries suffered unnecessarily by medicine in the war now ending. The surgeons general of both armed services repeatedly have affirmed publicly that the greatly augmented need for professional medical service of the army and navy was met by former civilian physicians, while the physicians of the regular medical corps necessarily were assigned to administrative duties with which only regular officers could be familiar. As potential military officers in future wars, we are therefore warranted in taking an active part in military medical planning.

First of all, we should aid the army and navy in peacetime training of their respective medical corps. Programs have been arranged for special resident training of medical officers in suitable military hospitals and, in order to meet requirements of the various specialty boards, our assistance has been requested. Second, we should insist on unification of all military medical services, including those of the army, navy, air forces and all special forces. It is imperative that a single authority, a physician on the general staff level, have the power to shift medical personnel from one branch of military service to another. This would prevent hoarding of skilled specialists in any one service as was done in the present war. It also would eliminate duplication of hospitals and medical personnel and would leave a great number of physicians at home for civilian practice. Third, physicians should alternate in civilian and military duty during war so that all the hardships, whether they be at home or in military service, will not fall on one group. Fourth, depletion of medical faculties and student rolls should not be permitted unless the nation is in extreme danger.

If American medicine could feel assured of the freedom it has always had, it would march briskly on to new heights of achievement and service. But it hesitates for it already has lost its freedom from fear. Fighting medicine and the fighting men it served are coming home, expecting to find the self-reliant, independent, fearless people they left behind. It is true that through the years of depression the weak, defeated and hopeless had looked more and more to government, at first for bread, then for everything, and government had generously increased its bounty—and its authority. But there had been little alarm—all that paternal care would pass with the return of better times. Now medicine and its comrades in arms are astounded to find the home folks confused and fearful, pushed around by insolent and selfish groups, regimented by government and almost resigned to prospective totalitarian rule. Collectivism has crossed the Atlantic from decadent Europe and is marching roughshod over the land of the free.

In this situation, the political philanthropists see a splendid opportunity to attempt the socialization of medicine, and the Wagner-Murray-Dingell Bill, now pending in congress, is the first great step in that direction. The bill is so cleverly drawn that it seems almost harmless; we are well aware, nevertheless, that its passage would mark the beginning of state-controlled medicine. Despite all claims to the contrary, any physician acting under the provisions of this measure would become the agent of a government bureau; he would be paid by the government and primarily would be responsible to it rather than to his patients. Stronger controls would soon follow, with disastrous deterioration of medical service. Even though we shall be charged with having only selfish motives, we must continue to warn the public of its danger. To paraphrase Winston Churchill's comment on English socialism, the American people under free and democratic medicine have shared somewhat unequally in the best medical service in the world; under socialized medicine they would share equally in the worst. Choice of one or the other rests with the people.

THE TREATMENT OF THE CORONARY EMERGENCY

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SURGICAL TREATMENT OF BRONCHIECTASIS

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BRONCHIECTASIS is a condition, not a disease, as it may result not from a single but from a wide variety of causes. The term means dilatation of the bronchus and has been recognized in its advanced stages with a loose, rattling cough, and profuse foul expectoration for many years. The past two to three decades, with the development and wider application of bronchoscopy and bronchography, have taught us much about this condition particularly in its earlier stages and have brought about the realization that much in a palliative and even more in a curative way can be done for this very distressing and often times unsocial condition.

Clinically, bronchiectasis presents a varied picture from that of a chronic or recurrent bronchitis, usually considered nothing more than a chronic cough, to the very advanced full-blown picture with a very profuse foul or bloody expectoration, with cyanosis, clubbing of the fingers and so forth so well recognized by everyone. Early, recurrent colds with cough and expectoration a little more profuse and of slightly longer duration than usual may be the only clue to suggest that actual lung damage has occurred. Perhaps there is a history of pneumonia or atelectasis in infancy or childhood, or perhaps a foreign body previously removed, or even a severe attack of measles or pertussis, but often there is nothing to suggest a more serious condition.

Later more profuse or persistent cough and expectoration of pinkish sputum or free to exsanguinating pulmonary hemorrhage may occur. Recurrent episodes of fever or localized slowly clearing pneumonitis may follow with pleurisy or even empyema of a putrid type. Clubbing of the fingers and watch-crystal nails, usually not seen early, may develop later without the patient's knowledge. The sputum may become foul or putrid as larger amounts are produced and stasis ensues. Chronic cyanosis, dyspnea, metastatic abscesses and other complications may ensue, and the patient's health, previously unimpaired, may begin to fail.

Pathologically the picture also varies widely. Early in the process there may be only slight cylindrical bronchial dilatation without much peribronchial infiltration or fibrosis. Later there are the findings of a chronic bronchitis of severe degree with peribronchitis and destruction of the bronchial musculature and even the cartilage. The bronchi not only become dilated, but the mucous membrane becomes so hypertrophied and thrown into folds, as to almost suggest polypoid formation. Atelectasis of varying degrees may also be present, until in some the lung may be shrunken to only a third or a quarter its normal volume. Secondary abscesses may develop distal to strictured areas in the bronchi, or the bronchi throughout the involved lobes of the lung may be dilated to the point where they resemble abscesses in themselves. The whole lobe or entire lung may eventually lose all gross semblance of pulmonary structure, being represented only by clusters of dilated, pus-filled bronchi surrounded by walls of dense indurated fibrous tissue.

The clinical recognition of the advanced stages of bronchiectasis is an easy matter. It is not so, however, with the earlier stages unless the clinician continually keeps the possibility of its occurrence in mind. Its discovery or recognition may adequately explain a number of otherwise obscure conditions, such as recurrent colds, recurrent pneumonias, the cough which hangs on, chest discomfort or tightness, pleuritic change, wheezing in the chest, or occasional frank pulmonary hemorrhage. A search for this conditon should be made in any chronic condition of the chest not readily explained otherwise.

Physical examination of the chest, even in advanced bronchiectasis without atelectasis, may be very deceiving as the physical findings may be scant or altogether absent. A localized area of râles, an inconstant rhonchus or slight percussion note changes may be the only findings, and even these may be absent. In the presence of atelectasis of a lobe or a portion of a lobe, more physical findings are present, but even with it the significance of the local findings is frequently overlooked. A very local area of percussion note change with distant breath sounds, slight elevation of the diaphragm, or slight cardiac displacement,

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may be the only clue to a completely atelectatic left lower lobe.

The x-ray examination may reveal little of note except slight elevation of the left diaphragm, slight shifting of the cardiac shadow to the left, or slight increased radiability of the left lung field, all of which may be easily overlooked. Once the condition is suspected, however, its demonstration is a relatively easy matter. Bronchoscopy may reveal a distortion of the bronchial tree, narrowing of a bronchus, a localized source of secretion, or a localized tumor or foreign body. Careful bronchography, mapping the major divisions of all lobes should be made in order to know the exact extent and character of the bronchiectatic process, for unless the exact extent and type of involvement is known no accurate decision as to the possibilities of surgical treatment can be made.

From the standpoint of treatment, a number of things can be done which may alleviate the patient's symptoms and give him at least temporary relief. The use of bed rest and symptomatic treatment early in a cold may reduce or eliminate persistent symptoms. Steam and expectorants may also be of considerable help. Chemotherapy, if susceptible organisms are present, undoubtely alters the course of individual attacks. Nebulized solutions of penicillin, streptomycin or other chemotherapeutic agents may greatly reduce the amount of cough and expectoration if susceptible organisms are present, but do not alter the underlying pathological process. Treatment of sinus disease and proper instructions as to avoiding colds, chilling and exposure, may help materially. Change of climate may be of value, particularly if it brings about reduction of the number of colds and respiratory infections.

Postural drainage may be of distinct value in removing secretion and reducing cough and perhaps, by promoting adequate drainage, eliminating sputum odor, but it must be used intelligently and in proper position or it will not give results. Bronchoscopy with dilatation of stricture, removal of foreign body, granulation tissue, or even benign tumor may facilitate drainage and thereby improve the symptoms, but if prompt results are not obtained it is folly to keep it up indefinitely. The injection of iodized oil for bronchograms may be followed by a rather marked improvement in symptoms, and if so may be repeated at regular intervals as a therapeutic measure.

Collapse of the involved portions of the lungs by artificial pneumothorax, diaphragmatic paralysis or even thoracoplasty may alter symptoms considerably and may be of value in temporarily controlling pulmonary hemorrhage. None of them, however, cure the condition and all may even aggravate the symptoms by interfering with drainage. The possibility of pleural complications, particularly in pneumothorax used in the treatment of this process, must always be borne in mind. X-ray therapy has brought about considerable symptomatic improvement in some patients with profuse expectoration, but it does not eliminate the original condition, and repeated use may bring about lung changes which are undesirable. All of the methods heretofore mentioned leave the diseased lung tissue in the body where recurrence, reactivation and even spread of the condition is to be expected.

The possibilities of surgical treatment for this condition have gradually been brought to light, and with improvement in surgical technique, in anesthesia and in chemotherapy, the potential risk of such treatment has now been reduced to the point where surgical attack on the less extensive stages of bronchiectasis have become amply justified. The possibilities of this type of treatment are not as widely known to the profession at large as the results accomplished would seem to warrant.

A brief consideration of the field for surgery in bronchiectasis may not be amiss. First of all a diagnosis of bronchiectasis does not mean that surgery is indicated, for many patients with bronchiectasis are altogether unsuited for surgical attack, and many others have bronchiectatic changes of such slight degree that surgical intervention is not warranted. Surgical treatment does not restore the lung to a normal functioning capacity, but rather removes the involved portion of the lung, often with a sacrifice of considerable good functioning lung tissue. Conditions within the thoracic cage never return entirely to normal after surgical attack. Serious thought must be given to all factors involved before undertaking such a procedure, and the pulmonary involvement and the disability therefrom must justify the surgical sacrifice.

There is much confusion as to the rate of progression of bronchiectasis and the longevity of patients afflicted with it, built upon figures obtained from studies of patients with advanced trouble and before the days of intensive chemotherapy, but the application of such figures to the earlier stages of the condition in this chemotherapeutic age are absolutely unjustified. By this statement we do not mean to minimize the seriousness of the process nor to deny that patients die from hemorrhage, from metastatic abscess, or during attacks of recurrent pneumonitis, but merely to point out that these serious complications are more frequent in advanced bronchiectasis and that the condition itself is a chronic one which need not be progressive and with which many patients may live in relatively good health for long periods of time. That it does progress is well known, but the rate of this progression may be very slow. That it is a distressing and disagreeable condition is also well known, and for those who are suitable we regularly recommend surgical intervention, but we do wish to point out that the diagnosis of bronchiectasis does not necessarily mean surgical operation, and that in the present state of our knowledge we are not justified in recommending surgical excision for the minor degrees of bronchiectatic change.

For the surgical treatment of bronchiectasis we have available three general procedures, total pneumonectomy for the removal of a completely involved lung, lobectomy for the excision of an involved lobe or lobes, and segmental resection or partial lobectomy for the excision of involved portions of lobes in an attempt to preserve all possible healthy lung tissue. The tendency of the disease to extend slowly from one lobe to an adjacent portion of the next lobe is well known, and it is frequently necessary to resect the left lower lobe and the adjacent lingular portion of the upper lobe for such involvement on the left side, or the lower lobe and the middle lobe on the right.

Bilateral excisions are perfectly feasible in young patients but are not well tolerated by older individuals in whom the lung has lost some of its elasticity and ability to overexpand and in whom emphysema and previous disease have reduced the available reserve air space and capillary bed of the remaining lung. Even in young individuals too extensive resection may lead to immediate difficulties with pulmonary edema, especially if transfusions in even slightly excessive amounts are given, or to later difficulties because of strain on the right heart. In general, the best indications for surgical treatment in bronchiectasis are presented in young patients who have involvement of one lobe or one lung, or one lobe and an adjacent portion of the adjoining lobe. Some patients presenting bilateral bronchiectasis which is much more extensive on one side may be so greatly benefited by excision of the worst portion of the lung that both the patient and the surgeon are content to tolerate the small residue which is left.

The surgical indications for excision in bronchiectasis of a localized type may be listed as follows:

1. Profuse or repeated pulmonary hemorrhage.
2. Recurrent local pneumonitis.
3. Profuse secretion.
4. Putrid sputum.
5. Chronic atelectasis, with or without demonstrable bronchial stricture.
6. The presence of benign tumor or foreign body with secondary bronchiectasis.
7. Tuberculous stenosis with secondary bronchiectasis of a symptom producing type.
8. Less extensive disease with persistent or recurrent symptoms which justify the risk of surgical excision.

Pulmonary resection for bronchiectasis may be carried out at almost any age if the condition warrants. In the present series the youngest patient operated upon was two and one-half years of age and the oldest fifty-six. Patients in the extremes of age, however, are not the most desirable candidates for chest surgery, and the risks attendant upon it are greater in both groups. The difficulties of anesthesia in the younger individuals, the dangers of suffocation from excessive secretion and swelling of the larynx producing laryngeal obstruction after bronchoscopy, or the use of an endotracheal tube definitely add to the hazard. In the older age group, cardiovascular complication, emphysema, reduced elasticity of the lung with poor expansion and the greater dangers of embolic phenomena again increase the risks. The best results are obtained in children and young adults, though surgery need not be confined entirely to this age group.

Pre-operative Care

Pulmonary resection for bronchiectasis except for the emergency indication of profuse hemorrhage is strictly an elective procedure and all possible precautions should be taken to render conditions as ideal as possible for the operation. A recent respiratory infection or bout of pneumonitis usually means increased bacterial activity and probably should call for a postponement of operation. Sinus disease and nasal obstruction with profuse nasal drainage should be controlled if possible before operation. Postural drainage to cut down secretion and relieve odor may also be of help. Preliminary treatment with penicillin and sulfonamides and the use of chemotherapeutic agents by inhalation in order to reduce sputum and the amount of bacterial activity may be of distinct value. Bronchoscopic aspiration in the patient with a large amount of sputum, particularly just before anesthesia is induced or immediately afterwards may aid greatly. Various measures to improve the patient's general condition, particularly in raising the hemoglobin and so forth may be quite beneficial. Of course, cross-matching and the provision of an adequate supply of blood for transfusion is mandatory.

Anesthesia is all-important. Quite a variety of techniques are available, but whatever the method chosen it must provide the following things if it is to be satisfactory:

1. Good anesthesia of controllable depth.
2. Adequate provision for repeated aspiration of secretions from the bronchial tree.
3. A high oxygen concentration so that cyanosis may be avoided.
4. A means of repeated periodic expansion of the remaining portions of the lung during the operative procedure.
5. An anesthetic agent from which the patient recovers promptly without prolonged postoperative unconsciousness.

This usually resolves itself into some type of combined anesthesia involving some combination of pentothal, curare, nitrous-oxide, oxygen, cyclopropane or ethylene, and the use of an intratracheal tube.

The operative technique may vary widely. Many lobectomies are performed in direct lateral position. We have always preferred a three-quarters prone position with posterior approach for most of these operations, though a middle lobe or upper lobe resection can be done adequately through an anterior approach. In positioning the patient, particularly the one with profuse secretions, care must be exercised to avoid turning the patient on the good side for fear of flooding it with secretions, even though the patient has apparently emptied the lung before operation. Anesthesia or manipulation may release a flood of secretion sufficient to almost drown the patient. Early clamping of the bronchus as soon as the chest is opened may help the anesthetist a great deal by cutting off the continuous escape of pus from the bronchiectatic lobe as it is manipulated. If the lobe is easily mobilized and the fissure is quite complete the application of a tourniquet may serve the same purpose.

The lobe to be excised may then be completely freed from the chest wall, diaphragm and mediastinum before proceeding with the hilar dissection, if this can be readily accomplished. However, if it is very densely adherent or if profuse bleeding is encountered in freeing it, it may be advisable to complete the hilar dissection and amputate the lung from the hilum before freeing it from the chest wall so as to avoid spillage, reduce bleeding and to allow the surgeon a little greater latitude in its removal. When this is done any bleeding which is encountered must come from the chest wall rather than from the lung itself and is more readily controlled.

Lobectomy by individual ligation of the incoming arteries, outgoing veins, with primary section and suture of the bronchus, is the most satisfactory procedure if the fissures are complete or can be readily dissected. This method leaves almost no devitalized tissue in the wound and greatly reduces the incidence of empyema and pleural complications. Less desirable but still quite satisfactory is the application of crushing clamps and suture of the lung so crushed. This method is necessary in the presence of incomplete fissure or in smaller excisions of portions of lobes, and has proven quite useful. Less desirable still is the mass ligation technique in which considerable strangulated tissue must be left in the stump as a possible source for future suppuration.

Following removal of the desired portion of the lung and the closure of the bronchus and suture of the crushed portion of the lung, the remaining lung should be expanded as the chest is filled with sterile saline to localize any bronchial or parenchymal air leakage which if found must be controlled with additional sutures. The escape of very fine bubbles around suture holes in the lung parenchyma should, however, not be a cause for concern as the suction catheters will well take care of any slight leakage.

After the removal of the lobe and before closure of the chest the remaining portions of the lung must be freed from the chest wall over a wide area and any limiting scar tissue dissected free from the lobe so that it may expand freely to obliterate the pleural space. It may be and frequently is desirable to pinch the phrenic nerve as it leaves the pericardium for the diaphragm in order to reduce the size of the residual space temporarily and eliminate the available pocket for fluid accumulation. This is particularly valuable in patients in whom more than one lobe has been excised or in whom the excision has produced some deformity of the lobe or some reduction in its ability to expand downward.

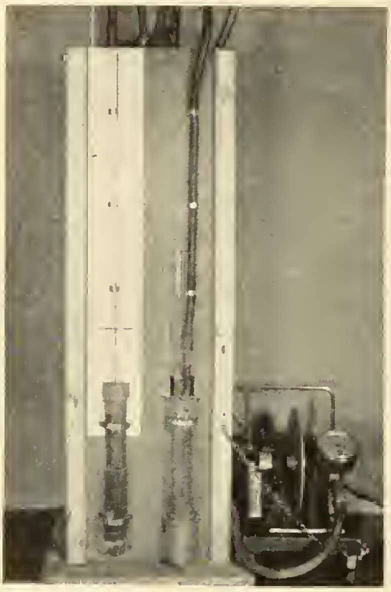

Fig. 1. Motor operated, adjustable, constant negative pressure suction apparatus.

The bronchial stump should be well buried in the adjacent pleura or lymph nodes to favor its rapid healing and obliteration. Whether the surgeon dusts sulfonamide powder on the bronchial stump or in the pleural cavity is a matter of individual preference though it should be governed somewhat by the amount of possible contamination which may have occurred. Following lobectomy some surgeons close without drainage while others close with a single tube for under water seal drainage. We have preferred to insert two or three intercostal catheters of about No. 18 size placed in strategic points in which fluid has a tendency to accumulate postoperatively, and to apply to these catheters a continuous negative pressure of about 15 centimeters of water by a controlled motor suction apparatus for twenty-four to seventy-two hours postoperatively in order to maintain expansion of the lung and to remove all secretion from the pleural cavity. If the fluid is removed the lung will become adherent and obliterate the space before infection has a chance to develop. Since using this method we have not encountered a single postoperative empyema in lobectomy operations done by the individual ligation or segmental resection technique and have not found it necessary to aspirate a single patient's chest to remove fluid during the postoperative period.

Closure of the chest wall may be accomplished by the use of pericostal sutures to approximate the ribs, leaving them in position to take the tension off the intercostal suture line if some difficulty is encountered in approximating the ribs. If not, the pericostal sutures may be removed as soon as the closure is effected by suture of the intercostal muscles. It is important in closure that no dead spaces be left in which fluid might accumulate to lead to subsequent chest-wall abscess.

During the operation the patient's condition must be followed closely, and fluid and blood supplied as they are lost or as they are needed to maintain the patient's circulatory balance. Sufficient blood should be on hand in the blood bank to take care of the patient's needs, to replace that lost during the operative procedure, as well as for any emergency which may arise. The danger of over transfusion must always be kept in mind, particularly in patients who have undergone bilateral resection or who have had considerable disease in the contralateral lung, lest pulmonary edema be induced.

Before the patient is allowed to come out of the anesthetic the lung must be thoroughly aspirated to remove all secretions and bronchoscopic aspiration carried out on the slightest suggestion of any retention. Again as the patient is moved from the operating table care must be taken not to turn the patient over to the good side lest any secretion migrate to other lobes and cause trouble.

Postoperatively the patient is given opiates in sufficient dosage to control pain, but not to suppress cough. The head-down position is used for a few hours to induce drainage of secretions from the deeper portions of the lung. The patient is encouraged to change position frequently as soon as conscious and to cough and raise at regular intervals in spite of pain. Steam inhalations and expectorant drugs are used as indicated. Any sharp rise in temperature should call attention to the probability of retention of secretion, and if it cannot be coughed out promptly bronchoscopy and aspiration should be done at once. The possibility of laryngeal obstruction from trauma following the use of the intratracheal tube or the bronchoscope must be borne in mind in small children and any stridor carefully watched, performing tracheotomy early in order to avoid possible complete obstruction.

The patient who received sulfonamides and penicillin for forty-eight hours pre-operatively is continued on these drugs postoperatively for several days until everything appears to be going well. He is encouraged to move around, to sit up early, and to get out of bed as soon as his strength will permit. The intercostal drainage catheters are removed in forty-eight to seventy-two hours and the openings sealed with collodion or mastisol. Skin sutures are removed in five to seven days. If no complications arise and the patient's general condition is good, he may be ready for discharge to his home in nine or ten days, and usually under two weeks from the date of operation. The following table of our local series of pulmonary resection from 1937 to 1946 performed for various diseases is shown in order to illustrate the differences in risk as carried out for different pathologic conditions.

You will note that pulmonary resection for bronchiectasis has been carried out in fifty-one individuals, seven total pneumonectomies and forty-four lobectomies, with but one death in the operative series within thirty days of surgery. This child developed a temperature of 106 on the operative table, rapidly mounting to 108, and died within a few hours without regaining consciousness. This operation was performed in hot weather before the gas cooling chamber had been added to the anesthesia machine in order to control body temperature. The operative mortality then for pulmonary resection for bronchiectasis in our hands has been 1.96 per cent in contrast to a total lobectomy mortality of 4.34 per cent and a pneumonectomy mortality of 22.86 per cent for all conditions combined.

TABLE I. PULMONARY RESECTION
1937-46

Pathologic Condition	Pneumonectomy		Lobectomy	
	No. of Cases	Mortality 30 Days	No. of Cases	Mortality 30 Days
Carcinoma	11	3	0	0
Abscess	4	2	7	1
Tuberculosis	9	1	6	1
Bronchiectasis	7	0	44	1(2.04%) (1.96%)
Benign Tumor	3	1	6	0
Cyst	0	0	5	0
Miscellaneous	1	1	1	0
Totals	35	8(22.86%)	69	3(4.34%)

Any consideration of mortality and operative risk of lobectomy for bronchiectasis must take into account the age of the patient, general condition, amount of secretion, extent of the lesion, and existing pre-operative complications if a fair evaluation is to be made. The risk of operation and the danger of complications is certainly greater in a young child with extensive disease and profuse secretion and perhaps a previous empyema, than it is in the husky young adult as seen in the various army camps.

The results in surgical treatment of bronchiectasis are eminently gratifying. No more grateful patient can be found in any field of medical endeavor than the young individual who has been dramatically relieved of a chronic loose cough with profuse, foul expectoration. The change in appearance, in attitude, and whole outlook on life is most striking. To return these young people to normal social and business activities and to an active life which has been denied them for many years because of their distressing disability is indeed a source of deep personal satisfaction to the surgeon.

THE TUBERCULOUS VETERAN

The veteran returning with tuberculosis places an added responsibility on the community. The incentive for many veterans to remain in their homes will constitute a menace to the public health. If we are to cope with this problem we must approach it with an understanding attitude. We must remember that although these veterans are the responsibility of the Government, they are also residents of the community, and, as such, are entitled to the same consideration as is given tuberculous non-veterans. When the tuberculous veteran returns to his home community he presents a health problem that must be solved by that community.—WILLIAM H. HICKERSON, M.D., NTA Bull., December, 1945.

THE VALUE OF THE X-RAY EXAMINATION IN THE DIAGNOSIS OF RUPTURED INTERVERTEBRAL DISC

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ALTHOUGH the diagnosis of posteriorly herniated disc is now made very commonly, it should not be regarded as an easy diagnosis to make. The greatest difficulty arises in the atypical or borderline cases both from the clinical and roentgenologic standpoint. The value of x-ray examination has changed considerably since the diagnosis of ruptured or protruded disc first became popular about twelve years ago. In the early days of the present concept of the ruptured disc all the patients had some type of spinogram or myelogram before operation. This was due to the fact that the clinical findings were not clearly understood. At the present time in the hands of capable and experienced physicians, it is not necessary to resort to myelography in a large percentage of the patients. It is advisable, however, in all cases suspected of having a herniated disc to obtain routine anteroposterior and lateral films of the lumbar spine and sacrum, even though it is never possible to make the diagnosis of a ruptured disc from these films. Other diagnoses may occasionally be made such as tumors, fractures, and infections, which will account for the patient's complaints and eliminate the need for myelography and alter the treatment. Narrowed discs, scoliosis, and straightening of the normal lumbar and cervical lordosis may be present in cases with a ruptured disc, but they have no conclusive diagnostic significance.

If the patient has been examined by a physician skilled in the diagnosis of the herniated disc and there is still doubt either as to the presence of or the level of a herniated disc, myelography may be necessary. This is not a simple procedure and consequently should not be undertaken unless it is genuinely indicated. Furthermore, it is not 100 per cent accurate. Although many substances have been injected into the spinal canal to outline the dural sac, most examiners have abandoned all but Lipiodol or the newer preparation, Pantopaque. Lipiodol, because of its high viscosity, is more difficult to inject and aspirate, but produces very good x-ray visualization. Pantopaque is easier to inject and remove, and its use also gives very satisfactory results. A further advantage of Pantopaque is the fact that it is slowly absorbed, which is not the case with Lipiodol.

The accuracy of the diagnosis with either substance is probably the same. Occasionally, a herniated disc may be present and no deformity be demonstrable. This is more often true at the lumbosacral junction than elsewhere. More commonly small deformities are found in the myelographic study and sometimes even large deformities and no herniated disc found at operation. This happens more often in the upper lumbar levels. Consequently one should be quite cautious about the diagnosis of a herniated disc above the level of the third lumbar vertebra.

In most cases the deformity as visualized by myelography is pathognomonic for a herniated disc. In a significant number of patients a positive diagnosis cannot be made from the myelogram alone, and a careful correlation of the myelographic and clinical findings is necessary. It is in this group of cases where the services of a very competent clinician is greatly appreciated by the radiologist. Surgery in these cases may often result in negative explorations. One should not operate primarily on the strength of an atypical x-ray deformity. In such cases, the burden of the decision of whether or not to operate lies with the clinician.

Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 22, 1946.

DANGERS OF AERIAL TRANSPORTATION TO PERSONS WITH PNEUMOTHORAX

Evidence accumulated seems adequate to justify warning all patients with pneumothorax to avoid transportation by airplane unless they can be assured that no altitude will be attained beyond that which they have previously tolerated without discomfort. Even under the latter condition it is possible that some harm might be done to unstable tuberculous lesions by the rather large degrees of alternate expansion and collapse which may be occurring repeatedly during a flight, especially when there are frequent landings.

—Dangers of Aerial Transportation to Persons with Pneumothorax, W. Randolph Lovelace II, M.D., and H. Corwin Hinshaw, M.D., *Journal of the American Medical Association,* April 11, 1942.

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE REPORT

ARTHUR H. WELLS, M.D., HAROLD H. JOFFE, M.D., and J. K. BUTLER, M.D.
Duluth, Minnesota

Dr. A. H. Wells: This is one of the best diagnostic problems of the year. A careful consideration of the patient's progress should lead a good diagnostician to include the proper diagnosis in his differential study. After the case presentation, we will give you our interpretation of the literature on the subject.

Case Report

Dr. M. S. Munson: Case 3420. This forty-year-old white male has been a known hypertensive for about ten years preceding his death on June 10, 1946. He was followed intermittently in the medical outpatient clinic and at the University of Minnesota Hospitals from 1938 to March 13, 1946. When first seen at the University, his blood pressure was 233/130; and since 1938 he has been troubled with shortness of breath on exertion, paroxysmal nocturnal dyspnea, and occasional mild precordial pain when working hard. In 1943 he was placed on potassium thiocyanate therapy with some benefit. All of his symptoms increased in severity in June, 1945, with associated nocturia, ankle edema, and abdominal swelling.

He was not seen at the University from 1943 until January 14, 1946, when he was admitted to the University Hospital, at which time a physical examination revealed some dyspnea even while sitting with relatively clear lung fields. The heart was massively enlarged, the left border being at the anterior axillary line and the right border about 4 cm. to the right of the midsternal line. There were frequent premature beats with a rate of 76 per minute and a blood pressure of 250/145. Fundoscopic examination revealed "grade II changes." The abdomen was enlarged with a fluid wave present, and the liver was palpable 9 to 10 cm. below the costal margin. The spleen was also enlarged. There was a 1 plus edema of the ankles and sacrum. Urinalyses revealed a specific gravity of 1.015 with no albumin and with a negative microscopic examination. The hemoglobin was 11 grams; the red blood cell count 3,510,000; the white blood cell and differential count were normal. The blood urea nitrogen was 35 mg. per cent with a creatinine of 2.2 mg. per cent. The venous pressure was 25.5 cm. of water and the vital capacity was 2600 c.c. Chest plate revealed extreme cardiac enlargement with evidence of pulmonary congestion. Electrocardiogram revealed a left ventricular strain pattern with delayed intraventricular conduction.

The patient was placed on a cardiac regimen which included bed rest, digitalis, a Schemm diet, potassium nitrate, and mercurial diuretics. His course was quite stormy, but he improved materially on the above therapy. However, he had a number of febrile episodes, some of which were associated with sweats and abdominal pain. One of these episodes was undoubtedly thought to be due to a pneumonia in the left lower lobe and another probably due to an infarct in the right lower lobe. However, he continued to complain of rather severe abdominal pain which was frequently associated with marked sweats and a sedimentation rate "above 100 mm." per hour.

Cholecystogram and gastrointestinal x-ray studies on two occasions revealed a nonfunctioning gall bladder and negative gastro-intestinal pathology. Bone marrow biopsy failed to reveal evidence of Hodgkin's disease. Peritoneoscopy was performed and verified the clinical impression of an enlarged spleen. A liver biopsy showed a mild degree of portal cirrhosis. Renal function studies revealed a moderate impairment of renal function and "a number of urinalyses" done after admission showed a 1 to 2 plus albuminuria with occasional casts, white and red blood cells.

He was seen by the department of surgery of the University Hospital which agreed with medicine section that the abdominal pain was not explainable on the basis of gall-bladder disease and, therefore, felt that surgery was not indicated. His condition improved during the prolonged hospital stay with considerably less abdominal pain and very little fever during the last three weeks. He regained some strength, had very little orthopnea, and was edema-free. However, the sedimentation rate remained "very elevated" and his hemoglobin dropped about one gram during this period. He was discharged on March 13, 1946, on a Schemm diet and digitalis grains 1½ daily, with instructions to increase his exercise very gradually over a period of four to six weeks and to return to the hematology clinic for further observation. The final diagnosis at the University Hospital was hypertensive heart disease with right and left failure, bronchopneumonia left lower lobe, pulmonary infarction and portal cirrhosis. In spite of the extensive studies, the cause of abdominal pain could not be determined.

He was admitted to St. Luke's Hospital on May 8, 1946, approximately one month before his death and about two months after his discharge from the University Hospital on March 13. Examination revealed no essential change in the physical findings. The blood pressure was 250/150. A neurological examination was normal. During the thirty-four days preceding his death, the white blood cell count ranged from 5,000 to 18,000 with as high as 94 per cent neutrophils, 34 per cent of which were non-segmented. The hemoglobin was 9.5 grams with a red blood cell count of 3,300,000. The blood urea nitrogen rose from 3 to 140 mg. per cent;

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.
Clerical assistance by Miss Faith Gugler.

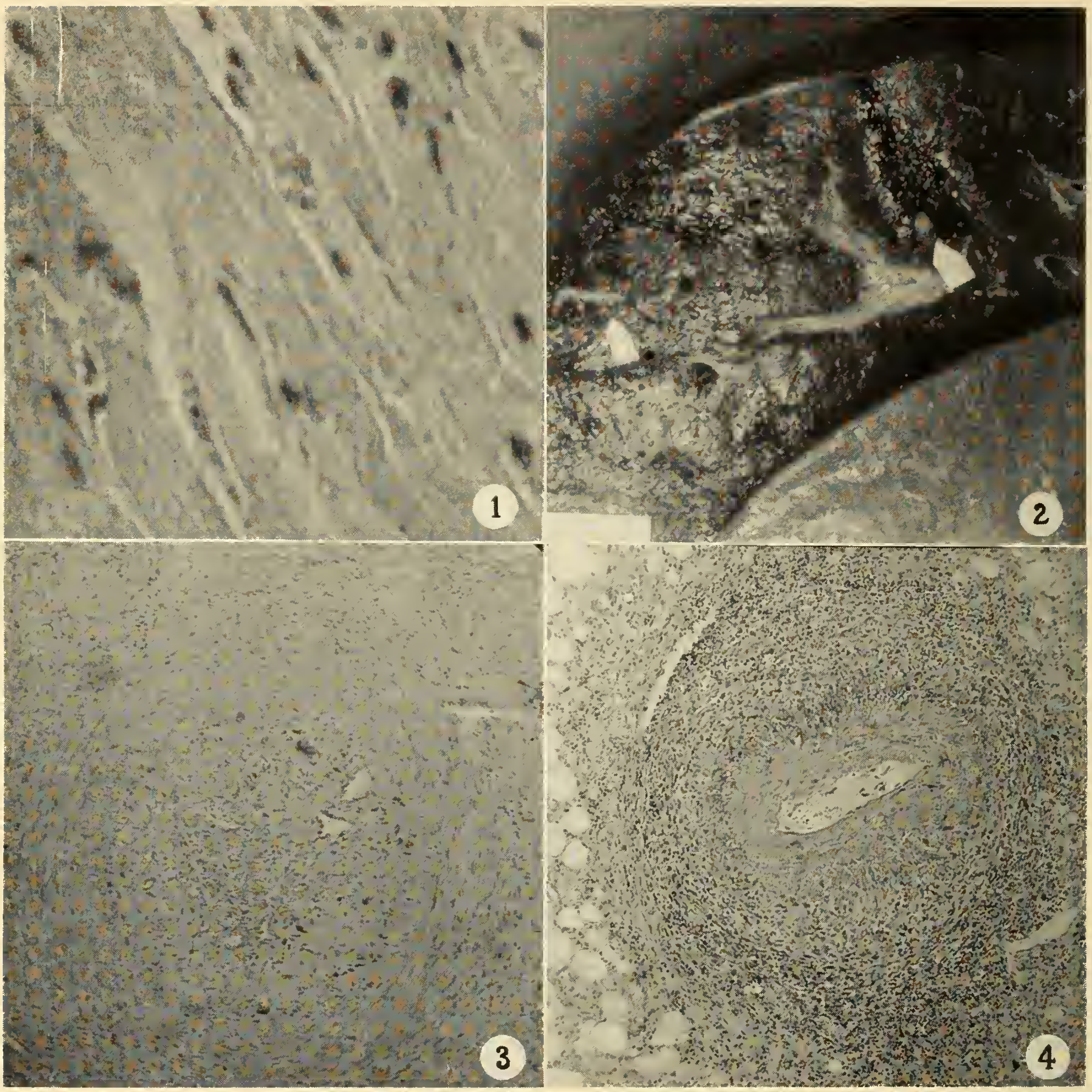

Fig. 1. Patchy atrophy and necrosis of myocardial muscle fibers. Fig. 2. Small infarcts in liver, also pale finely granular fibrous kidney. Fig. 3. Recanalized lumen of small artery in liver with fibrosis of portal area (healed lesion). Fig. 4. Necrosis of media of small pancreatic artery with dense neutrophilic infiltration (acute active lesion).

the creatinine from 1.9 to 4.3 mg. per cent; and the icterus index from 5 to 12. The total plasma proteins were 6.6 grams per cent and the galactose tolerance test was normal. Urinalyses revealed a 1 to 4 plus albumin with the highest specific gravity of 1.014 on two tests with 10 red blood cells and 20 pus cells per high power field in two samples.

The patient's course was progressively downhill with gradual loss of strength and weight, while he complained of generalized malaise and abdominal discomfort. He developed small suppurating furuncles about the face and chin, became extremely restless, and during the last day developed some twitching of his stiffened limbs and eyes. There was terminal cyanosis with a fall in blood pressure to 154/100. Expiration was on June 10, 1946, thirty-four days after admission.

Dr. A. H. Wells: The case is now open for diagnosis.

Physicians: Hypertensive cardiovascular renal disease terminating in uremia, chronic pyelonephritis, subacute bacterial endocarditis with intestinal thrombosis, miliary tuberculosis, carcinoma of the pancreas and hypertensive disease, pheochromocytoma, and polycystic disease of kidneys.

Autopsy

Dr. A. H. Wells: This patient had periarteritis nodosa. There was a severe involvement of the small arteries of the heart, lungs, liver, kidneys, intestines and pancreas. The patient very likely also had hypertensive cardiovascular renal disease, the lesions of which blend in with those of the periarteritis nodosa and cannot be differentiated from them. It is difficult to say whether chronic congestive heart failure or uremia was the more important in the immediate cause of death.

I will briefly review the positive findings of the postmortem examination. The heart weighed 800 grams. There was alteration of coronary arteries, myocardium, pericardium, and right auricle. The coronary arteries had a severe atherosclerosis with hemorrhages into atheromatous areas and active neutrophilic and lymphocytic infiltration in their walls. One large branch of the anterior descending coronary had an old occlusion and recanalization. The myocardium had extensive patchy, small areas of fibrous scarring not clearly visible on gross examination. There were small areas of necrosis, atrophy, and degeneration (Fig. 1.) There was some cellular proliferation and edema of walls of the smaller arterioles. The pericardium of the ventricles was covered with a thin sheet of pinkish staining, fibrinous exudate with beginning organization and rather mild patchy lymphocytic and neutrophilic infiltration of the surface. No bacteria could be demonstrated with special stains or cultures of this exudate. The right auricula had a 3 cm. in diameter, plaquelike area of fibrosis with two small mural thrombi near the margins. There was myomalacia of the auricular musculature and rather extensive fibroblastic proliferation and mild neutrophilic and lymphocytic infiltration of the area. No arteries could be identified. The lungs had a peculiar acute inflammatory process characterized primarily by thromboses of the smaller arteries and arterioles with dense neutrophilic infiltration in surrounding air spaces about the vessels. Large clumps of Gram-positive cocci, rarely in chains, were demonstrated in these vessel walls and air spaces. A careful study failed to reveal bacteria in any of the other organs. Large, dark-red, pyramidal-shaped areas in the liver (Fig. 2) were found to be old healed infarcts with a completely missing liver tissue and severely congested sinusoids. Rare, recent infarcts with necrotic liver cells were found. Numerous medium-sized arteries with recanalized lumina were present (Fig. 3). A few of these arteries had organizing thrombi with pigment-laden phagocytes and lymphocytes in the vicinity. There was a rather extensive cellular proliferation and hyalinization of small hepatic artery walls throughout all sections. This was associated with a fibrosis of the portal areas amounting to a grade I cirrhosis of a type pathognomonic of periarteritis nodosa. The spleen had a grade III hyalinization and thickening of central artery walls without thromboses typical of that found in hypertensive disease. There were many small arteries with necrotic walls and severe neutrophilic infiltration and fibroblastic proliferation in the periadrenal connective tissue. The pancreas had occasional moderate-sized arteries with necrosis of their walls and dense neutrophilic infiltration of the walls and surrounding tissues (Fig. 4). There was an interstitial fibrosis (grade II) throughout the pancreas. The kidneys had rather severely thickened and cellular walls of inter- and intralobular arteries and a hyaline necrosis of occasional arterioles (Fig. 5). There was moderate interstitial fibrosis, occasional hyalinized glomeruli and frequent granular casts in tubules. There were patchy clumps of necrotic small artery walls in the submucosa of the small intestine with overlying acute ulcerations of the mucosa and adjacent fibroblastic proliferation and hyalinization in the submucosa. Nerves from the sacroiliac plexus reveal some cellular proliferation and edema of artery walls in the perineurium and no necrosis of nerve fibers. The arteries of the meninges had no sclerotic or inflammatory change.

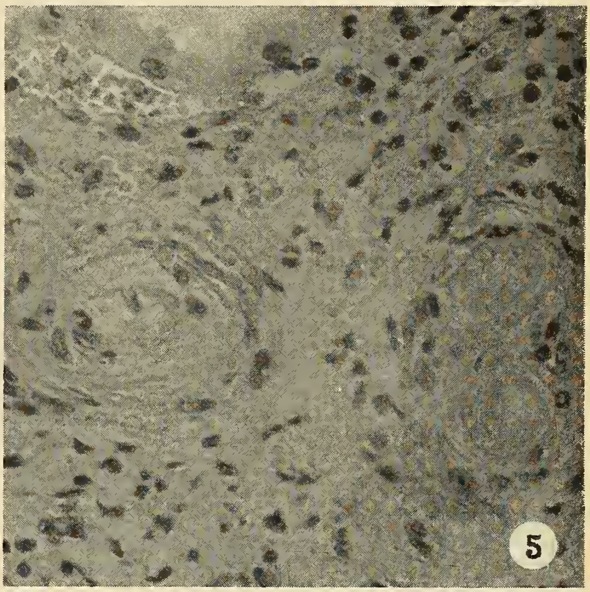

Fig. 5. Cellular proliferation and edema with near obliteration of lumen of small intralobular artery of kidney, also hyaline degeneration of arteriole.

Discussion

Dr. A. O. Swenson: Which came first, the hypertensive cardiovascular renal disease or the periarteritis nodosa?

Dr. A. H. Wells: I don't know. I'm inclined to believe that the patient developed his idiopathic hypertensive disease first. As a matter of fact, I'm not certain but that the two conditions are the same disease process in this individual.

Periarteritis nodosa is a morphologic entity caused by a variety of agents and characterized primarily by a widespread segmental necrosis of small artery walls with subsequent inflammatory reaction, thromboses, hemorrhages, aneurysms and infarctions and scarring of involved organs. The disease is rare. Out of 460,000 admissions at the University Hospital of the University of Michigan there were only 14 cases.[14] The disease is three times more frequent in males.[10] The average age of onset is 36.9 years, although it may occur from the first month of life[37] to advanced age. The disease has been described as occurring spontaneously in pigs, dogs, deer, and calves.[15] Seventy per cent of the patients die in the first four months.[8] However, cases living from eight to twelve years have been reported. Approximately 90 per cent of the cases terminate fatally. Only 15 per cent are recognized before the necropsy.

Pathology

Periarteritis nodosa is a disease primarily of the small artery and arteriolar walls. Rarely, large arteries, veins, capillaries, and in our case auricular walls are involved.

The large serous cavities and joint surfaces also have acute inflammatory changes (polyserositis and arthritis). The artery wall lesions are scattered, segmental, and focal in nature. The histogenesis has been divided into four steps: (1) The original degeneration or necrosis which involves the outer third of the media of arteries with vasa vasorum (Fig. 4) and the entire thickness of arteriolar walls (Fig. 5). (2) There follows a severe neutrophilic infiltration (Fig. 4) in the necrotic areas which extends to the intima, adventitia and perivascular tissues. (3) The healing process includes organization of thrombosed lumina, granulation tissue reaction in perivascular areas and lymphocyte, plasma cell, and eosinophil infiltration. (4) Scattered lesions or all involved areas may be completely healed by scar tissue (Fig. 3).

The sequelae of the artery wall injury, including thrombosis, aneurysm formation, rupture with hemorrhage and occlusion by cellular proliferation, may be followed by atrophy, degeneration, and infarction of the various organs and tissues of the body. In a review of 87 cases reported in the English literature,[10] the following percentages of involvement were recorded: kidney 87 per cent, heart 84 per cent, liver 71 per cent, spleen 31 per cent, and lungs 25 per cent. Rarely, the principal and at times the only lesions may be in isolated organs.[14] No tissue or organ is entirely immune to the disease.

Isolated or milder degenerative changes in artery walls of unknown etiology including those found in rheumatic fever, malignant hypertension, disseminated lupus erythematosis, scleroderma, dermatomyositis, and Libman-Sacks disease, apparently cannot be differentiated from some of the lesions of periarteritis nodosa.

Etiology

Some of the causes of periarteritis nodosa are known. The exact mechanism of action of the various toxic and inciting agents needs further clarification, but at present the injury of the artery walls appear to be best explained as a result of allergic responses. A high percentage of patients with periarteritis nodosa have prodromal, associated, and precipitating illnesses[32], such as acute tonsillitis, acute sinusitis, scarlet fever[13], rheumatic fever[8,23,30,32,35], serum sickness[28], sulfatherapy reaction[28], eclampsia[35], asthma (15 per cent)[10,33], trichinosis[26], and allergic reaction to iodine.[27] Rich and co-workers have reported cases as the result of serum therapy alone or associated with sulfonamide therapy in pneumonia[28], also in iodine hypersensitivity reaction.[27] They have produced typical arterial lesions in rabbits with serum and sulfonamides.[29] Some of the experimental rabbits also developed typical acute glomerulonephritis and others "Ashoff bodies" in the myocardium. This allergic relationship of acute glomerulonephritis, rheumatic fever, malignant hypertension, and a series of rarer diseases including Osler's erythema group, purpura hemorrhagica abdominalis[32], scleroderma, dermatomyositis, disseminated lupus erythematosus, and Libman-Sacks syndrome[2] to periarteritis nodosa are repeatedly referred to in the literature.

The hypertension which occurs in 64 per cent of patients with periarteritis nodosa is easily explained on the basis of interference of arterial flow (Goldblatt kidney) due to the arteritis. However, in many cases, as in our present patient, the hypertension appears to have preceded the periarteritis by years. Thus, a systemic predisposition to periarteritis nodosa may be indicated. Similar predispositions are also thought to exist in cases of asthma and rheumatic fever. On the other hand, the diffuse necrotizing arterial lesions known as periarteritis nodosa may rarely occur in certain individuals as an accentuation of these various diseases.

Bacterial invasion of arterial walls is a well known and separate disease process not to be confused with periarteritis nodosa. The end result of healed arterial occlusion, aneurysms and tissue scars may well be difficult to differentiate in these two conditions. Filterable virus parasites, rickettsia, and other infectious explanations of periarteritis nodosa are conjectural. No infectious agent has been demonstrated in the artery walls.

Clinical Manifestations

"Triads" and "cardinal symptom complexes" have been described without general acceptance because of the varied and bizarre manifestations in many cases of periarteritis nodosa. A review of 101 cases in the English literature[10] revealed the following frequency of signs and symptoms: fever, eighty; leukocytosis, seventy; albuminuria, 65; hypertension, (64 per cent); rapid onset, fifty-eight; abdominal pain, fifty-seven; edema, fifty-two; loss of weight, forty-eight; neuritis, forty-eight; hematuria, forty-seven; dyspnea, forty-one; weakness, forty-one; emaciation, thirty-six; cough, thirty-six; vomiting, thirty-one; sensory involvement, thirty-one; headache, twenty-nine; arthritis, twenty-seven; atrophy, twenty-five; visual disturbances, twenty-three; purpura, twenty-two; cyanosis, twenty-one; eosinophilia, nineteen; nausea, seventeen; nodules, sixteen; pain in chest, sixteen; allergy, fifteen; convulsions, fifteen; icterus, twelve; vertigo, eight; and positive syphilitic serology, eight. The clinical recognition of periarteritis nodosa can be arrived at in most cases by a careful study of four considerations: (1) the general reaction, (2) multiplicity of organ involvement, (3) laboratory studies, (4) the exclusion of differential diseases. The common general reactions are fever, leukocytosis, weight loss, weakness, and eosinophilia. If there is no other explanation for a prolonged fever, periarteritis should be considered. This is especially true if there are apparent lesions with several different organs and tissues of the body. This multiplicity of organs with corresponding wide variation of signs and symptoms is characteristic of the disease. The laboratory may aid in making an absolute diagnosis from a biopsy of skin nodules which occur in about 15 per cent of cases. Muscle biopsy without palpable nodules may also be diagnostic.[15] The leukocytosis is generally moderate but may become severe, reaching 70,000. Eosinophilia occurs in one out of five cases and may reach as high as 70 per cent. The urinary sediment has been described as diagnostic of periarteritis, lupus erythematosus, or Libman-Sacks disease in that it shows red blood cells, white blood cells, oval fat bodies, fatty casts, broad casts, and abnormal quantities of protein.[17] The spinal fluid may give evidence of a very low grade, nonspecific, inflammatory process. It is possible that the diagnosis may be established by experts by a sigmoidoscopic examination.[7] The eye ground changes are apparently not diagnostic. The cases with complicating appendicitis, perforation or gangrene of the gastro-intestinal tract, cholecystitis, et cetera, resulting in acute surgical, abdominal emergencies may be later diagnosed by microscopic study of surgically removed tissues.[34] The principal diseases to be included in the differential diagnosis are: miliary tuberculosis, Hodgkins' disease, syphilis, trichinosis, myositis, purpura hemorrhagica, typhoid fever, amebiasis, abscess of liver, meningitis, brain tumor, alcoholic polyneuritis, infectious peripheral polyneuritis, lead neuritis, hypertensive cardiovascular disease with coronary and renal involvement and parasitic infestations.

Treatment

One case may have been cured by the use of sulfonamide therapy.[9] Many others have not responded to this drug. Since periarteritis nodosa is frequently associated with other infections, sulfonamide and penicillin therapy might find some practical application in certain cases. Otherwise, the therapy is primarily symptomatic. Salicylate, papaverine hydrochloride, and opiates have been mentioned frequently.

Summary

We have presented a case of periarteritis nodosa in a man of forty years who for ten years had a severe hypertension and showed some evidences of cardiac insufficiency. These symptoms became severe during the last year. There was in addition an unexplained abdominal pain, rapid red blood cell sedimentation rate, intermittent fever, cough, and loss of weight and strength. He died of chronic congestive heart failure and uremia. Several lesions of different ages occurred in small arteries and arterioles in the heart, lungs, liver, spleen, pancreas, and kidneys.

An incomplete survey of the literature leads us to the belief that periarteritis nodosa is a morphologic entity due to a variety of inciting agents. Many cases can be explained on the basis of an allergic reaction ("hives of arteries"). There is an interrelationship between periarteritis nodosa and malignant hypertension, glomerulonephritis, rheumatic fever, asthma, eclampsia, and other allergic conditions.

A review of the pathology, etiology, clinical manifestations, and treatment is included.

Final Diagnosis:

1. Periarteritis nodosa
    a. Involving the heart, lungs, liver, spleen, pancreas, adrenals, and kidneys
    b. Chronic congestive heart failure
    c. Uremia
    d. Terminal bronchopneumonia
2. Hypertensive cardiovascular renal disease

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◆ HISTORY OF MEDICINE IN MINNESOTA ◆

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from August Issue)

The name of **H. W. Barnard,** of Granger, is included with some doubt as to whether he was a practitioner of medicine. In 1870 his name appeared, together with the names of J. D. Pollock, a dentist of New Hampton, Iowa; Dr. J. W. Reade, of Lime Springs, Iowa; Dr. Kingsbury of Leroy; and Dr. R. L. Moore of Spring Valley, in endorsement of one H. J. Stalker, an itinerant dentist.

John S. Beagle, born in 1873, graduated in 1896 from the Hahnemann Medical College of Chicago, and licensed in 1897 as a physician in Minnesota, has been said to have practiced medicine in Chatfield and also in Spring Valley. The present note is inserted to supply a correction: Dr. Beagle has stated in a letter of August 11, 1943, to the writer that although he spent his boyhood and youth in Spring Valley and was graduated from the Spring Valley High School (incidentally, in the same class with Henry S. Plummer), he never was a resident physician anywhere in Fillmore County, but in 1897 began to follow his profession in Rose Creek, Mower County. In 1898 he was married to Fantine Van Loan, of Hamilton, Fillmore County. "My life and experience have been those of the ordinary country doctor, beginning in the days of horse and buggy travel."

In 1909 Dr. Beagle moved from Rose Creek, Minnesota to Sidney, Montana, where, with the exception of a temporary removal to California, in 1926, he has remained. In Sidney, in the period from 1912 to 1919, he was associated in practice with Dr. F. A. Gowdy, who from 1896 to 1912 was a physician and surgeon of Fillmore County; in 1919 Dr. Gowdy moved from Montana to Florida.

A fuller note concerning Dr. Beagle will appear with material on the history of medicine in Mower County.

Erastus Belden, son of Emanuel Belden, of English descent, was born on March 26, 1809, and his wife, Julia Ann Lyons Belden, on March 30, 1811; both were natives of New York. Dr. and Mrs. Belden about 1835 with three young children journeyed to Ohio in search of a new home; in Elyria, Lorain County, a son, Ira, was born in January, 1837.

Soon afterward they returned to New York, to Steuben County, where they lived for some years. In 1853, with their physician son, Wallace P. Belden and two younger children, they came from Rochester, Monroe County, New York, into Southern Minnesota, and shortly afterward settled in the vicinity of Hamilton and Spring Valley in Fillmore County. A few years later they moved a short distance to the community of Frankford in Mower County.

When Dr. Erastus Belden died at Frankford in February, 1867, the *Rochester*

Post paid tribute to him as "a skillful surgeon and a thoroughly posted physician of the old school." He was buried in the Frankford Cemetery, where a large inscribed boulder marks his grave. Julia Lyons Belden died a year later in Rochester, Minnesota.

The children of Dr. and Mrs. Belden were as follows: Harriet born on April 6, 1829; Wallace P., born on January 11, 1831; Cordelia, on December 13, 1833; Ira W. on January 14, 1837; and Ermina and Orpheus G., twins, on April 12, 1845. About the lives of the daughters little has been learned. The second son, Ira, was a blacksmith. He preceded the rest of the family into Minnesota and lived in Frankford for about ten years, serving most of the time as constable or as deputy sheriff. Later he was in Zumbro Falls and finally in Maseppa. Orpheus, the third son, studied medicine, but did not complete the course. He was a farmer near Frankford; in the eighties he managed a hotel, the Valley House, in Spring Valley for his brother Wallace. He lived in Rochester, Olmsted County, for a few years and later returned to Spring Valley to spend the remainder of his life. More information has been available concerning the eldest son, Dr. Wallace P. Belden.

Wallace P. Belden, the second child and first son of Dr. and Mrs. Erastus Belden, was born in or near Rochester, New York, on January 11, 1831. The family removed to Minnesota Territory in 1853, as has been told, and settled in the region of Spring Valley and Hamilton, in Spring Valley and Sumner Townships, Fillmore County. Young as he was, Wallace J. Belden was a qualified physician, and he and his father became known professionally in Austin, Mower County, and in Albert Lea, Freeborn County, as well as in their chosen community in Fillmore County.

In the course of the journey west, Wallace Belden met and was married to a young girl, Emilia (Oakey?), from Oregon, and at various times in succeeding years Dr. and Mrs. Belden made visits to the wife's home in Marion County, Oregon. Their first children, triplets, of whom two died at birth, were born there; the third, Emma, lived to grow up. There were other children, a daughter Jennie, and a son Oakey who lived only a few years; the son's grave is in the village cemetery of Hamilton. Not long after his death Mrs. Belden died in Oregon and was buried there. The two daughters, Emma and Jennie, thereafter remained in the West and until they married lived with their maternal grandmother in Oregon. Years later, in the middle eighties, Dr. Belden was married to Miss Josie Porter, of Spring Valley; of this marriage there was one child, who died at birth.

Shortly after his arrival in Fillmore County, in 1853, Dr. Wallace P. Belden, young, ambitious, and apparently better off financially than the average pioneer settler, invested about $3,000 in the surveying, platting and development of the little settlement of Beldena, named for his family, in the southeastern part of section 9, on Deer Creek, in Spring Valley Township, and set about making improvements. A dam was thrown across the creek to secure water power, a blacksmith shop was opened, and other enterprises were initiated or planned. Attracted by the apparent advantages offered, a group of families moved to the village. The rivalry of nearby settlements was strong, however, the village never was recorded, and in a few years Beldena disappeared, except for the dam, which held until 1858, the pond which it had caused providing a favorite fishing place for the neighborhood. Beldena, like many another village, was begun in the hope and expectation that because of its excellent location on a stream and in the path of traffic the railroad would go through it, and the belief that it would become a railway point kept this hope alive through a long period of discouragement. Relatives of Dr. Belden have in their possession letters which he wrote to his sister Harriet from Beldena in 1855 and 1856.

During this early period and for many years subsequently Dr. Belden followed his profession. During the Civil War he served as surgeon of the Sixth Minnesota Regiment of Volunteer Infantry, from September 20, 1864, when he was mustered in, to August 19, 1865. A letter which he wrote from Headquarters of the Regiment at Helena, Arkansas, on October 29, 1865, to Governor Stephen Miller, of Minnesota, concerning conditions of sanitation in the camp and measures taken to improve them, reflects a man of education, sense of responsibility and social obligation, and professional ability. His two brothers, Ira and Orpheus, the latter too young for military service, but so eager to follow the example of his brothers that he swore to eighteen years, enlisted at the same time as Dr. Belden.

Beginning in 1861, Dr. Belden was in Hamilton, where he owned his home, a large house superior to the average village residence of the day. In addition, as indicated by his name on a topographical map, he was the owner of a considerable tract of land on the outskirts of the village. In the early seventies he sold his home to Dr. Albert Plummer, who had settled in Hamilton in 1869. Dr. Plummer, himself an exceptionally well-trained physician of the regular school, has been quoted by his son, Dr. William A. Plummer, as saying that Dr. Belden was a good citizen and an able physician.

From 1870 for several years, among the professional cards published in *Western Progress,* the newspaper of Spring Valley, appeared the following notice: "W. P. Belden, Physician and Surgeon, Hamilton, Minnesota." For an unspecified and presumably brief period in the early seventies Dr. Belden lived in Rochester, Olmsted County, and while in that town became a member of the Minnesota State Medical Association. His name did not appear on the roster after 1874.

A statement signed by Wallace P. Belden, dated May 21, 1881, on file with his dossier at the Veterans Administration in Washington, gives concisely the places of his residence from 1861 to 1881, inclusive:

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> That during the three years immediately preceding my enlistment, upon the 24th day of August, 1864, I resided in the Village of Hamilton, Fillmore County, Minnesota, for about nine years, until December, 1874;
>
> That I then removed to the Pacific Coast and resided in the Village of Hubbard, in Marion County, Oregon, from January, 1875, to May, 1878;
>
> That I then removed to Canton, Jackson County, Iowa, and resided there from June, 1878, to March 1881;
>
> That I then removed to Spring Valley, Fillmore County, Minnesota, where I now reside.

It was during the years spent in Oregon that Mrs. Belden died. When Dr. Belden returned to Fillmore County, to the village of Spring Valley, in 1881, he continued medical practice and established his offices in the Valley House, a hotel which he bought and placed under the management of his brother Orpheus. After his second marriage, about 1886, Dr. Belden and his wife operated the hotel. Orpheus G. Belden removed to Rochester.

Dr. Wallace P. Belden died in Spring Valley on July 9, 1889, in his fifty-ninth year, and was buried near his son in the Hamilton cemetery. He was survived by his wife and by relatives, including his two daughters and nieces and nephews. One of the nieces, Julia Belden (Mrs. Frank Metcalfe), daughter of Orpheus G. Belden, made her home with her uncle for ten years, after his return in 1881 and during her early school days and girlhood. She has said that although Dr. Belden was spoken of in the community as an irritable and eccentric man, he always was very kind to his family and to her and that "for all his would-be hardness he was very softhearted."

Howard Bell, a graduate of the Medical Department of the University of New York City, in 1884, was licensed on March 10, 1885, to practice in the State of Minnesota, receiving certificate No. 1008 (R). At that time he was living in Lanesboro, Fillmore County. Little information concerning him has been available, and the length of his residence in the state is uncertain. It has been learned, however, that for a time in 1885 and into the spring of 1886 he was in partnership with Dr. F. A. Blackmer, in Albert Lea, Freeborn County, and that around 1888 he was briefly in Mower County. Judging from the evidence of official medical directories, he left Minnesota early in the nineties, perhaps sooner, and returned to the East. For many years, until his death, in 1923, he was in Delhi, New York.

J. G. Bemis, in the autumn of 1867 arrived in Farmington, Dakota County. In 1872 he was practicing medicine in Lanesboro and was listed in a commercial registry as a favorable business risk. His name has not been found in medical directories of the state. From March 26, 1872, to January 8, 1873, Dr. J. G. Be(e)mis was coroner of Fillmore County. In 1880, and obviously earlier, he was in Waterville, Le Sueur County, and in that period sent in a report on diphtheria to the State Board of Health.

A Dr. J. G. Bemis, born in 1844, a graduate of the Bennett College of Eclectic Medicine and Surgery of Chicago, in 1883, was licensed in Illinois in that year and well after the turn of the century was practicing in Chicago.

Karl O. Bendeke, a native of Norway, was born on April 21, 1841. In 1867, two years after his graduation from the medical school of the Fredericiana University at Christiania (Oslo), he came to the United States and shortly after his arrival matriculated at the Chicago Medical College. Graduated in 1869, he returned to Norway that year to be married to Josephine Fanske, of Bergen, and in 1870 he brought his wife to the village of Rushford, in Fillmore County. After several years of medical practice in which he won the respect and confidence of patients and of fellow physicians alike, in 1874 he removed with his family from Rushford to Minneapolis. His intention at this period had been to make a trip to Norway and, learning that Dr. Jacob Wright Magelssen, then of Wisconsin, was visiting his brother, The Reverend Kristen Magelssen, who was living at Highland Prairie, seven miles from Rushford, Dr. Bendeke drove over to see him, hoping to persuade him to take over temporarily the Rushford practice. As events developed, Dr. Bendeke decided to establish himself in Minneapolis and Dr. Magelssen so liked the village of Rushford that he brought his family there and remained for fifty-seven years.

Under the Medical Practice Act Dr. Bendeke on November 10, 1883, received state license No. 255 (R). On June 18, 1885, at the seventeenth annual meeting of the Minnesota State Medical Association, held in St. Paul, he became a member of the organization.

Dr. Bendeke remained in Minneapolis until his death, which occurred in the first week of January, 1906. In the following February, at a meeting of the Hennepin County Medical Society, of which Dr. Bendeke had been a valued member, Dr. Johan C. Hvoslef, of Lanesboro, one of his distinguished contemporaries in Fillmore County, as the guest of the society addressed the members in tribute to the life and character of Dr. Bendeke.

————**Bingham**, said to have been newly graduated from Rush Medical College, was the second physician, in approximately 1865-1867 (after G. M. Alsdurf), to settle in Le Roy, Mower County, where he was introduced by the Messrs. Coleman. In different accounts it was stated that from Le Roy he removed after a short time to Lanesboro, Fillmore County, where not long afterward he died from smallpox. This man may have been Dr. D. W. Bingham who was in Winona in 1865.

At the risk of confusing the issue by conjecture, the following data, from a history of Minnesota in the Civil War and the Indian Wars, concerning the military record of Dr. Reginald Bingham are added; understandably, but unfortunately for the sake of proof, the valuable aid of official bureaus in Washington in tracing and identifying is not so freely available in time of war as it is in time of peace. On July 24, 1861, Reginald Bingham was appointed surgeon of the Second Minnesota Regiment of Volunteer Infantry. Aged thirty-one years, he was mustered in on July 26, 1861, and was mustered out on May 27, 1862. On November 22, 1862, Reginald H. Bingham was mustered in as assistant surgeon of the First Regiment of Mounted Rangers; he resigned for promotion on May 7, 1863. On May 16, 1863, Reginald Bingham was mustered in as a surgeon of the Ninth Minnesota Regiment of Volunteer Infantry, and on August 24, 1865, was mustered out.

The *National Republican* of Preston, Fillmore County, on January 24, 1873, gave the following positive information:

> It is not true that the pauper at the poor farm, whose hand and foot have been amputated in consequence of freezing, came to his said calamity by going out in the great storm. He had been picked up in the woods in the Township of Norway in the latter part of December and turned over to the overseer of the poor to whom he refused to give any definite account of himself. The amputations were performed on New Year's Day by Dr. Wheat [of Lenora] assisted by Dr. Bingham.

And in another column: "We regret to learn of the death of Dr. Bingham, of Lanesboro, by smallpox. Three other cases are reported in that village today."

David A. S. Britts (the name has appeared in various forms and sometimes lacking the initial D) was for a few months in 1879, it has been said, assistant surgeon in the Lanesboro Sanitarium, an institution established not long previously and managed successfully by the well-known "White Beaver," Dr. David Frank Powell, of Lanesboro, Fillmore County.

Inasmuch as Dr. Britts, a resident of southern Minnesota since his boyhood, began his career as a medical practitioner in the village of Marion, Olmsted County, in the early seventies, a biographical record will be included in an account of early physicians of Olmsted County. His Lanesboro experience came during his last year of residence in Brownsdale, Mower County, where he had gone in the summer of 1876, and just before his removal to Clearwater, Wright County. Ultimately he became a resident of Minneapolis.

————**Burkaus**, according to the *Lanesboro Herald* of December 31, 1868, was the only physician in Lanesboro, and he was dealing at the time with numerous local cases of typhoid fever and other sickness. Another resident doctor, it was stated, was expected to arrive the following week; undoubtedly the newcomer was Dr. Luke Miller.

Charles William Cady, son of American parents and one of seven children, was born on September 17, 1847, at Saratoga Springs, New York. His father was The Reverend Edgar Cady, both farmer and Baptist clergyman; his mother, Emma A. Edwards Cady, remembered by her granddaughter as "a very kind, good woman and a very hard worker." His brothers and sisters, all deceased (1941), were James, Eben, George, Harriet (Mrs. D. G. Frank), all of Medford, Minnesota, and Della (Mrs. Crossman) and Hobart, both of Owatonna, Minnesota.

The Reverend Mr. Cady, sent to Minnesota by the American Board of Missions in 1857, brought his family to Lake City, in Wabasha County, where he served for a few years, at the end of which he retired from the ministry and took up farming near Owatonna, in Steele County.

Charles William Cady received his early education in the schools of Lake City and Owatonna, and it was in this period of his life that there began and ended his brief but not inglorious military career. A mere lad when the Civil War began, he ran away to enlist, but the army rejected him because of his youth, and his father, active in obtaining the rejection, brought him home. At the age of seventeen years he went to Illinois, where he worked on a farm, taught country school and sold books, at the same time continuing his education. After these experiences he studied at the Chicago Theological Seminary, but by the end of six months he had decided on medicine as a profession and had entered on a course of reading under a preceptor, Dr. Eli M. Morehouse, an eclectic physician and surgeon of Owatonna. On completion of this grounding, Mr. Cady entered the Bennett College of Eclectic Medicine and Surgery in Chicago, from which he was graduated in February, 1877. Always a student, throughout his medical career he kept himself informed as to medical progress by reading the literature and by taking postgraduate work, the latter during three different periods at Rush Medical College in Chicago.

Although Dr. Cady long was a physician of Fillmore County, he first resided many years elsewhere in the region. He began his practice at Blooming Prairie, in Steele County, Minnesota, immediately after his graduation from medical school, but the location was not satisfactory, and when he heard of the need for a physician at Burr Oak, Iowa, he drove down to investigate and was so pleased with the place and the prospects that he stayed. With the exception of the months spent in postgraduate work and of a year in St. Joseph, Missouri, he lived and practiced in Burr Oak for fifteen years.

The beginning of his life in Burr Oak was not auspicious, for shortly after his arrival in the hamlet, a stranger in a strange town, as he said, he lost his only wealth, a twenty-dollar gold piece, and for a time he worked on neighboring farms for his board and room. An epidemic of diphtheria, in 1877, at Lenora, Canton Township, launched him on his professional work in Fillmore County, Minnesota. The disease was virulent, taking a toll of four and five members in some families. At the peak of the epidemic Dr. Cady was called to the home of a storekeeper in Lenora; the son had died, the daughter was in critical condition, the parents were exhausted, the mother so ill and discouraged that she had taken to her bed. Dr. Cady made the trip from Burr Oak to Lenora on horseback, took over the entire responsibility for the household, cleaning the house, doing the washing and cooking and caring for the sick child. The mother soon regained strength and hope and nursed the daughter back to health. The people of the stricken community turned to Dr. Cady; he remained with them, brought all his patients safely through, and from that time on he was a busy physician, so extending his practice that he often drove his horses forty miles in a day.

The doctor loved good horses, drove them with exceptional skill, and treated them well. At first possessing only a saddle horse, he later drove one horse to a two-wheeled cart, later still had two horses and both a carriage and a cutter, and finally kept at least six horses in fit condition in his stable, so that a team that had traveled forty miles should have two days' rest before going on the road again. The equipment which he carried was like that of the physician in the picture by Hertzler, "The Horse and Buggy Doctor"; grips of medicine and instruments, shovel, hammer and other tools for repairing buggy and harness, and a soapstone. Those still were years of poor roads and lonely stretches of country and often to his hazardous trips, especially in the region of Bluffton, Iowa, the screaming of wildcats was a cheerless accompaniment. When automobiles first appeared, Dr. Cady, because of his love of horses, resented them, but gradually he became an enthusiast and owned several successive cars, the first a Ford runabout, and he continued to drive his own machine until after his eightieth birthday. Nor did he at first consider the telephone an unmixed blessing; it was the subject of a rather rueful joke in the family when on occasion it rang to cancel a professional call that Dr. Cady at some personal sacrific had arranged to make.

In 1892 Dr. Cady removed with his family from Burr Oak, Iowa, to Mabel, in Newburg Township, Fillmore County, Minnesota, a community in which he long had been a trusted physician, and there he began a medical practice which was to continue thirty-six years. Under changing conditions of medical licensure he had been licensed in Iowa in 1887, and he was licensed in Minnesota in 1898.

He was a skilled pharmacist, who dispensed all his own drugs, made tinctures from herbs and compounded his own ointments and pills until reliable manufactured preparations became available. Some of his former patients recall his magic "worm cure" and describe his remedies in general as "little white pellets over which various medicines were to be poured."

Devoted to his country practice, Dr. Cady refused the offer of a professorship at the Bennett Medical College of which he was a graduate. Trouble and difficulties he always met courageously. Although he was crippled badly as the result of a serious illness, he continued to visit his patients, even when he could guide his horses only by exerting pressure with his shoulders on the reins, which were secured around him, and when he had to be carried from his vehicle to the house. Always he gave his services generously, without descrimination as to the financial status of his patients; often he was not paid; sometimes he accepted wood and produce in return.

Interested in public health and sanitation, Dr. Cady served for many years as health officer in Mabel and as county physician in the village and Newburg and Preble Townships. He was an active worker in the Houston-Fillmore County Medical Society (formed in 1904), a member of the Southern Minnesota Medical Association and of the state and national medical associations, and was representative as well in civic life. He was an adherent of the Republican Party. He had been reared in the Baptist faith, but in the absence of a Baptist Church in Mabel he became a member and supporter of the Methodist Church.

Dr. Cady was married twice. His first wife was Elizabeth Turner, of Burr Oak, and of this marriage there were two children: Helen (Mrs. Elmer Stroud) and Charles V. Cady, both of Mabel. Some years after his wife's death, Dr. Cady was married to Mary Hiscock, of Coggen, Iowa.

On January 24, 1928, eighty-one years old, Dr. Cady died at his home from the infirmities of age, after a life of faithful and ethical service in the profession he loved. He was survived by his son and his daughter; Mrs. Cady had died four years previously.

The tributes paid him by the local newspaper, by close friends and by patients, all of whom were his friends, were those which are given only to the humanitarian physician who has served well. From the paper: "Old timers will long carry a pleasant association of memories for Dr. Cady, attesting to his successful work as a doctor and signifying the fine esteem in which he was held as a citizen." From a friend of the family: "Your loss is our loss. Seldom is a man so beloved by every one as your father. His life was truly used, as I believe the Lord intended, in service of mankind."

George Elmore Campbell, who was to be for six years a representative physician of Fillmore County, was born on May 11, 1867, in Columbus, Wisconsin, the son of Frederick E. Campbell and Cornelia Miller Campbell. Both of them natives of Vermont, F. E. Campbell was born in Putney and Cornelia Miller in Westminister West. It has been said by one of her grandchildren that Mrs. Campbell belonged to a family of fourteen children, all of whom "had the wanderlust"; a brother, a true pioneer, who had left home for the West before she was born, first became known to her decades later in California, where he was the owner of a large orange grove. Mr. and Mrs. Campbell had two children: George Elmore and Henry, who died in 1868.

When George E. Campbell was a child of school age the family removed to Rochester, Minnesota, where they remained for many years. Here the boy grew up, numbering among the youths of his acquaintance Charles H. and William J. Mayo, Frank B. Kellogg and John Willis Baer, and here and in St. Charles continued his education, completing a high school course and receiving business training. In October, 1887, he was married to Alta E. Vine, of Viola, Minnesota, a native of Dunn County, Wisconsin, and a daughter of Mr. and Mrs. William Vine, who were early settlers of Olmsted County. For several years Mr. and Mrs. Campbell made their home in Rochester.

Belonging to a family which through many members was identified with the medical profession (Dr. Daniel Campbell was one of Vermont's most eminent surgeons), George Campbell was inclined to the study of medicine. For a time his medical work was postponed because his father, who had acquired large tracts of land, was anxious that he should try farming. He did as his father wished, but after a few years decided to become a physician; in 1895 he was graduated from the medical school of the University of Minnesota and in June of 1896, in Hennepin County, was licensed to practice in the state.

In 1896 Dr. Campbell moved with his family to Wykoff, in Fillmore Township, Fillmore County, where he applied himself with energy and intelligence to the practice of his profession. In this period, as throughout his life, he was progressive, both in professional and in civic activities. He identified himself with medical societies, local, county, state and national, read extensively and began early by travel and postgraduate study at home, and later abroad, to increase and improve his knowledge. In 1898 and again in 1900 he did postgraduate work at the Medical School of the University of Chicago, paying especial attention to general surgery and diseases of the eye, ear, nose, and throat. During his absence in 1900 Dr. Wendell B. Grinnell, newly graduated from the University of Chicago, carried on his practice for him; Dr. Grinnell later settled in Preston. Dr. Campbell while in Wykoff founded and for six years managed successfully his own excellent hospital. When he removed from the village, the hospital was taken over by Dr. Claud W. Woodruff who, shortly after graduation from Rush Medical College in June, 1901, had joined him in practice; four lears later Dr. Woodruff left Wykoff for Chatfield. Dr. Grinnell and Dr. Woodruff, both of whom have remained in Fillmore County, were two of the many younger physicians who were associated with Dr. Campbell at different periods in his long professional career.

His arduous life as a country doctor began to affect his health adversely, and in the autumn of 1902 Dr. Campbell removed permanently with his family to Pasadena, California. In 1899, at the suggestion of his father, who had spent several winters on the Pacific Coast, he had obtained a license to practice medicine in California. Since 1900 he had been licensed to practice in Wisconsin also. At the time he left Wykoff he was serving a term of two years as coroner of Fillmore County.

In California Dr. Campbell continued in professional and civic life, practicing medicine, working in the local and state medical associations and supporting enterprises for the betterment of the community. He was a member of the staffs of the Huntington Memorial Hospital and of St. Luke's Hospital, was active in various fraternal orders, a member and supporter of the Presbyterian Church, and a member of the Board of Directors of the Pasadena Historical Society. His busy life left little time for hobbies as such. In the society of his family, to whom he was devoted, and in raising flowers in his beautiful garden, he had his greatest enjoyment and recreation. Mention may be made here of one of the numerous evidences of his sympathetic and generous nature, and that is the financial aid, known only after his death, which he gave to the poor, especially to those of his patients who were in need.

Dr. and Mrs. Campbell had three children. The eldest daughter, Nilva, died in Pasadena in 1905; the daughter, Avis, was married to Barnett Adkinson; the son, Dr. Leon G. Campbell, followed his father worthily in the medical profession. The Campbell grandchildren are Margaret Jane, Patricia Ann and Leon George, Jr.

Dr. George E. Campbell was fortunate in being able to carry on his work to the end of his life; he died suddenly on February 14, 1940, from coronary thrombosis, after a busy day spent at his office and in making hospital rounds. Mrs. Campbell survived, with the son and the daughter, and in 1943 continued to reside in the family home in Pasadena.

Temperate, ethical, kindly, a fine citizen, Dr. Campbell held the respect and esteem of his medical colleagues as a capable physician and surgon of the older school, and the love and trust of his patients as a family friend and physician.

S. M. Carr, said to have been an herb doctor, through the nineties and probably much earlier practiced medicine in the community of Pilot Mound, in Pilot Mound Township. His name was observed in a gazetteer and business directory only and could not be found in any medical directory available. An early resident of Fillmore County said (in 1943) that Dr. Carr "died forty years ago."

(To be continued in the October issue.)

President's Letter

Minnesota's 1946 Poliomyelitis Epidemic

INFANTILE paralysis began its epidemic appearance in Minnesota this year in June in north Minneapolis. In its earlier-than-usual appearance, in the steepness of the case-incidence gradient, and in its size, severity and mortality, the 1946 epidemic has differed from previous ones. There were an estimated 1,825 cases in 1909. Reported cases in 1925 were 955. Most frequently in previous epidemics the peak of case incidence has been around September 1. At the present moment (September 9), 2,034 cases have been reported among Minnesota residents.

As the epidemic spread in Minneapolis, Dr. F. J. Hill, Health Commissioner, with a special committee of which Dr. E. J. Huenekens and Dr. C. Gates were members, secured additional offers for the care of patients at the Minneapolis General Hospital, Sheltering Arms, Michael Dowling School and the Sister Kenny Institute.

By late July, the pattern of the epidemic spread over all of Minneapolis, and the radiation of cases throughout neighboring counties became apparent. By early August, many counties remote from the Twin Cities reported cases.

Many rural Minnesota patients were hospitalized at the University Hospitals. Mr. Ray Amberg, Superintendent, soon found that available beds there would be inadequate for the increasing number of rural cases.

Governor Thye called a meeting of representatives of the various official agencies, including Drs. A. J. Chesley, R. N. Barr and D. C. Fleming of the Minnesota Department of Health; Dr. Gaylord Anderson, Professor of Preventive Medicine and Public Health, University of Minnesota Medical School; Mr. Ray Amberg, Superintendent of the University of Minnesota Hospitals; Dr. F. J. Hill, Health Commissioner of Minneapolis; Dr. A. E. Nichols, representing Dr. R. B. J. Schoch, Health Officer of Saint Paul; Dr. Walter Bierring, Iowa State Health Commissioner; Dr. E. F. Warner, Medical Director of the U. S. Public Health Service; and the writer as representative of the Minnesota State Medical Association and the State Division of Social Welfare. At this meeting, definite plans were agreed upon for the future handling of various phases of the epidemic in rural Minnesota.

All physicians of the state were sent an outline of procedure as agreed upon at the meeting. All physicians were requested to notify the State Department of Health of any new case by collect telephone call or telegram. This information has been relayed by the Services for Crippled Children of the Division of Social Welfare to its field nurses and county public health nurses. Through these persons, both the attending physician and the patient's family are given any assistance needed in the hospitalization or handling of cases.

Mr. Carl Swanson, Director of the Division of Public Institutions, Dr. C. C. Chatterton and Miss E. McGregor, Chief of Staff and Superintendent, respectively, of Gillette State Hospital, immediately made available 40 beds, and later 100 beds for release of mild or convalescent cases from the University Hospitals. Dr. Ruth Boynton, Director of the University Students' Health Service, placed at the disposal of the University Hospitals 50 beds for such cases in the Agricultural Campus buildings.

With only 200 beds thus available for rural cases already numbering 585, physicians were requested to care for all mild, abortive or non-paralytic cases in rural or local hospitals. Patients insisting upon the Kenny method of treatment were requested to contact either the Minneapolis General Hospital or the Sister Kenny Institute directly.

The National Foundation for Infantile Paralysis has offered almost unlimited funds for services, equipment, medical care and hospitalization. The Farmer Magazine offered its Helping Hand Fund for the care of patients from farm families. The Children's Bureau in Washington has materially increased funds for care of such patients. Governor Thye has offered full co-operation of all state departments and additional funds if necessary.

The Services for Crippled Children of the Division of Social Welfare was named as the agency to co-ordinate public and private facilities during the epidemic. Its telephone number is Nestor 2651, Minneapolis, or Cedar 4721, Saint Paul, and its address is 610 Globe Building, Saint Paul. Anyone needing service or assistance is requested to contact this agency.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MEDICAL EDUCATION AND MEDICAL PRACTICE

THE current as well as the traditional function of a medical school is the education of physicians for the practice of medicine. At times other activities, such as the advancement of medical science, particularly when this leads to important discoveries, may seem to overshadow this less spectacular primary function. In fact, the reputation and standing of a medical school are determined more by the scientific work of its faculty than by the quality of its teaching. Scientific work is more easily evaluated and more widely appreciated than is medical teaching.

This basis of evaluation is not necessarily wrong because scientific investigation and good medical education go hand in hand. This does not imply that good investigators are necessarily good teachers. Every medical graduate can cite numerous examples to the contrary. It does mean, however, that a progressive scientific interest and attitude on the part of a medical faculty is essential for a strong educational program. It is not sufficient that students be taught medicine as it is practiced today. It is even more important that they acquire a scientific attitude and interest which will insure a continuous increase in and enrichment of their medical knowledge.

Medical education is the foundation upon which medical practice is built. As such, it naturally must adjust itself to changes in practice. A quarter of a century ago specialization in medical practice was in its infancy and the body of scientific knowledge which a medical graduate needed to possess was far smaller than it is today.

With the development of specialization at the graduate or postgraduate level, the undergraduate medical curriculum has been devoted more and more to the basic principles and procedures of medical practice. For clinical instruction formal lectures and operative clinics have been replaced by clinical clerkships on which the student, under careful guidance and supervision, studies individual patients at the bedside and in the clinics. The result is that the medical graduate of today, although lacking proficiency in specialized techniques and procedures, has a much better foundation for general medical practice than did the graduate of a generation ago. At the University of Minnesota additional clinical preparation for practice is assured by the requirement that graduates complete at least a year of acceptable internship before receiving the degree of doctor of medicine.

During the war the University of Minnesota Medical School conducted an accelerated program in order to train physicians as rapidly as possible for service with the armed forces. This was the normal, not an abbreviated, medical curriculum. Acceleration was obtained by omitting the usual summer vacation.

With the end of the war transition from this accelerated curriculum to a medical course extending over four calendar years will be made but the transition will be gradual. Coincident with this change some revisions to improve and strengthen the medical curriculum are contemplated.

Education for medical practice is not finished when a student graduates from medical school but must continue throughout the lifetime of a physician. Realizing this, the University of Minnesota has been a leader in the development of postgraduate courses for practicing physicians. These courses which enable practicing physicians to keep abreast of the developments in medicine have been exceedingly valuable, popular and well attended. Since the termination of the war the program has been devoted primarily to the needs of physicians who are returning to the civilian practice after having served as medical officers with the armed forces.

One of the trends in medical practice which is under discussion and a certain amount of criticism at the present time is the increase in specialization and the establishment of standards for recognition as specialists in the various phases of medical practice. This subject provoked considerable discussion at an open forum conducted at the time of the recent meeting of the Minnesota State Medical Association. The problems which were the real basis of these discussions are difficult ones. Increasing demands for specialized training raise questions as to the number of specialists which are needed in a state such as Minnesota and as to the provision of medical care for the general population, particularly in rural communities. Certification of specialists raises further questions as to the application of these standards to general practitioners of medicine.

The specialty boards have been established by the special societies and the corresponding sections of the American Medical Association. The standards for certification in turn have been formulated by the respective specialty boards. In providing graduate training in the various specialties, the Medical School, of course, attempts to meet the standards required for certification in order that its graduates may be accredited.

The acceptance of "certification" as a requirement for the practice of a specialty is the responsibility of governing boards of hospitals or of the agencies, federal, state, or local, responsible for the administration of medical care programs in which the services of specialists are utilized. For members of its own faculty the Medical School encourages but does not absolutely require "certification" by the respective boards.

Recently there has been a great increase in the requests from physicians for specialized training. A number of factors are responsible for this. Prior to the war the advantages of "certification" for those who wished to be known as specialists were becoming apparent. Then during the war, the recognition and special privileges accorded to specialists by the Army, the Navy, and the Veterans Administration greatly accelerated the demand for specialty training. In fact, the number of discharged medical officers requesting specialty training far exceeds the training opportunities available. To help meet these demands the University of Minnesota has expanded its opportunities for graduate training, particularly through affiliation with the Veterans Hospital in Minneapolis. This has more than doubled the training opportunities available for specialized training but, even so, only a fraction of those who desire and have earned the opportunities for graduate training can be accommodated.

For this increased interest in specialty training the Medical School cannot be held responsible. It has been said that the medical faculty urges undergraduate students to become specialists. This is incorrect. The medical faculty is well aware that the need of the public is primarily for "family physicians." With this in mind the medical curriculum emphasizes those aspects of medicine which are of greatest importance to physicians practicing in smaller communities.

Concerning general practice the senior medical students are told in a course entitled Orientation to Practice:

"General practice offers the advantage of a quicker start, of a more varied experience, and of less overhead expense. There is a tremendous satisfaction in feeling that one belongs to the various families under his care as a sort of honorary member, and of sharing in their joys and sorrows as does no specialist. And though the general practitioner may not have the delight in knowing that he is the master of one branch of medicine, he yet has the satisfaction that comes from the ability to view the body as a whole rather than in sections." (Dr. Wingate M. Johnson)

"A new sort of clientele is emerging for the doctor of the future that will call for all the social and intellectual adaptability at his command. In this new order of society there is a call for a different type of family doctor or general practitioner than was required a generation ago. Although of somewhat different mold he will be the central figure in the field of medical practice as in the ages past. He is the basic doctor of tomorrow and of the new order. . . . He will approach medicine with a broad cultural training in the natural sciences and in humanities so that he can read aright the faults of heredity and the laws of eugenics, to interpret more readily the problems underlying the biologic. . . . By reason of his broad medical training he will be perfectly competent to take care of 85 per cent of general medical practice, aside from being equally competent to know when, where, and how to seek advice in the other 15 per cent." (From Dr. Walter L. Bearing's address as President of the American Medical Association)

The University of Minnesota has today a Medical School of which the citizens and particularly the physicians of the state can be justifiably proud. Its faculty is among the best in the nation, its student body carefully selected and of distinctly superior ability, its facilities basically sound and in the process of expansion; and, above all, its alumni practice a quality of medicine which reflects credit upon the school which gave them their training. This institution stands ready at all times to co-operate with the physicians of the state in meeting the problems which will continue to confront medicine in a "changing order."

Harold S. Diehl
Dean of the University of Minnesota Medical School

TOO MANY SPECIALISTS

THERE are some 180,000 licensed physicians in the United States. Of these about 125,000 are members of the American Medical Association. On March 1, 1946, 26,108 had been certified as specialists by the fifteen specialty and four sub-specialty boards. In 1939 some 4,000 had been certified. Thus on an average over 3,000 have been certified yearly since 1939 in spite of the war. This figure of 26,108 indicates only certified speclialists and does not include the thousands who claim to be specialists but who have not taken the necessary steps to become certified. A survey indicated that some 12,000 physicians in the armed forces planned to seek certification. As the certification of younger physicians requires three to five years, following internship, of postgraduate work as residents in hospitals, the demand for residencies has been greater than the supply, even though the number of hospitals approved for residencies has been increased. At the beginning of the war there were 5,256 approved residencies. They now number 8,930, not including those in the army and navy hospitals and those of the Veterans Administration. It is estimated that the available residencies constitute about 77 per cent of the present need. It would seem a conservative estimate that 10,000 to 15,000 will be added in the next five years to the 26,000 now certified.

We heartily approve of the certification of specialists by specialty boards. Requiring physicians to meet certain professional requirements before they are entitled to be classified as specialists is only right and proper, and serves as a protection to the public. The question arises whether the specialist has not been too greatly magnified in the eyes of the laity and medical profession alike, so that we shall before long have too many specialists for the best interests of both the laity and the profession.

It is estimated that 85 per cent of ills can be well taken care of by general practitioners. If this is so, the percentage of specialists should not be much more than 15 per cent of practicing physicians. It would seem, therefore, that we are headed in the near future for an overproduction of specialists.

An oversupply of specialists will have its economic repercussions. It means more expensive medical care and cut-throat competition between specialists. This will not be beneficial for medical practice. It will encourage unnecessary medical care and further concentration of physicians in larger centers of population. After investing a minimum of ten to twelve years and thousands of dollars in preparing for their vocation as specialists, many are doomed to disappointment.

It has long been recognized that a few years of general practice serve as a good preparation for specialization. The general practitioner acquires a better realization of the many factors, psychic, economic and otherwise, which so often result in functional disturbances in patients. The physician whose entire training is limited to the hospital is too likely to be overimpressed with laboratory medicine and forget the patient is a human being. Specialists who have had a few years in general practice will attest to its value. It would be well if some shorter period of training for specialization could be devised for those who have had the experience of general practice.

Today, as in the past, the medical graduate has a much better chance of earning a competent livelihood from a start in general practice than in a specialty. Many, after a few years in general practice, choose to remain general practitioners.

For the good of medical practice in general, every encouragement should be given recent graduates to enter general practice and no discouragement such as discrimination against them by hospitals should be tolerated. It is good to learn that the University of Minnesota Medical School is encouraging recent graduates to enter general practice, as stated by Dean Diehl in his editorial which appears in this issue.

PROGRESS IN THE CHILD HEALTH SERVICES STUDY

RECENT issues of Minnesota Medicine have announced the conduct in this state of a Study of Child Health Services as part of a nation-wide survey established by the American Academy of Pediatrics. The study in Minnesota is sponsored by the State Medical Association which has the support of the State Dental Association and the Northwestern Pediatric Society whose membership has special duties in the survey. At the request of these agencies, the Minnesota Department of Health established an office for the actual work of the study and now reports on the progress made. The information is dated August 15, 1946, and is summarized below for the four activities of medical, dental and hospital care and public health services.

The dental care survey was begun immediately after the announcement of the study late in May and is now nearing completion. The information was obtained from practicing dentists in three district dental societies through personal visits by a Minnesota Department of Health staff member. In the remainder of the state the dentists were mailed a questionnaire. Already, 1,335 dentists, or 70 per cent of the approximate 1,890 practicing dentists, have completed the questionnaires. This result compares more than favorably with that obtained in North Carolina where the American Academy of Pediatrics tested the method of this survey.

The plan for the collection of the medical care information includes the mailing of a questionnaire to the physicians in each local medical society after a meeting at which a Minnesota pediatrician discusses the purpose and method of the study. This meeting has been held by the St. Louis, Southwestern Minnesota, Clay-Becker and Olmsted-Houston-Fillmore-Dodge County Societies. Meetings are also scheduled in late August and early September by the East Central Minnesota, West Central Minnesota, Waseca, Kandiyohi-Swift-Meeker and Red River Valley Societies. It is hoped that these meetings will all be completed early this fall, and society secretaries who have not made arrangements may immediately contact Mr. R. R. Rosell, executive secretary, Minnesota State Medical Association, to make arrangements for the appearance of a pediatrician before their groups.

Every physician will be sent a one-page questionnaire, except pediatricians, who will receive a special two-page questionnaire. The questionnaire is to be completed by every physician engaged in private practice. A physician not in private practice is asked to indicate that fact and give his name and address on the questionnaire and return it to the study offiice.

The hospital services section of this study was integrated with the state-wide hospital survey being conducted under the supervision of Governor Edward J. Thye's committee. Questionnaires were distributed to 264 general and specialized hospitals. Seventy-four institutions have returned the completed questionnaire. The study of public health services whether under public or private auspices is under way.

The purpose of this study is to obtain accurate information for the evaluation of existing health services for children and for the use of physicians and dentists, in systematic planning for adequate care for children throughout the state. Its success will depend on the co-operation of every physician, dentist, hospital and public health agency. The Minnesota dentists have already established an enviable record in completing these questionnaires which the physicians, hospitals and health agencies will have to work hard to equal.

Roland E. Nutting, M.D.
Minnesota State Chairman
American Academy of Pediatrics

CONSUMER CONTROLLED MEDICAL SERVICE

THE "co-op" movement is well established in the north central states, at least in Michigan, Wisconsin and Minnesota. A well-attended conference was held recently in Two Harbors, where a local co-op group has already taken over the ownership and management of the community hospital formerly owned by local doctors practicing in Two Harbors. For many years this hospital had provided medical and hospital care for the railroads, the ore docks and the machine shops, incidental to the handling of large amounts of iron ore trans-shipped down the Lakes from the northern Minnesota iron mines. The Two Harbors hospital, while giving this primary service on an industrial basis, has always provided facilities for all the people living in the community and on adjacent farms.

This local experiment in a co-op owned and managed hospital has developed into a plan to provide medical service as well. It is contemplated, it is said, to employ as many doctors (some as specialists) as needed, and thus to make the entire medical and hospital service a "consumer directed" enterprise. The meeting of delegates from Canada and the United States, similarly interested in consumer plans for medical service, brought to Two Harbors some two hundred delegates. Some of the program was broadcast over the usual networks, and from the technical standpoint the meetings were newsworthy and were accorded "a very good press." Among the speakers of national note was Professor Haven Emerson of New York City and Columbia University. His many friends and those acquainted with his judicious and fearless appeals for better public health service need have no concern lest he may have lent his force, judiciousness and understanding to the support of issues outside the pale or opinion presently obtaining within our own councils and representing our goals and ideals. Suffice it to say that he gave them some very forthright advice about medical and hospital service, and it was by no means a reflection of Leftist political and economic diversion or opinion challenging almost every feature of our present social organization.

The purpose of this editorial is not to weigh the evidence or comment upon what this meeting connotes in terms of future developments. It is offered because of the request made by Professor Emerson that some attempt be made to lay the foundation for a better understanding with groups such as were represented at Two Harbors. The violent criticism directed towards our profession and its society plans was far beyond what Professor Emerson thought could arise anywhere. Most of those speaking before this conference seemed to see nothing good in anything we are doing or planning, including our own prepayment medical plan; nor were they any more favorably inclined towards Wagner-Murray-Dingellism at the Federal level. The co-op group bitterly resented the efforts of our state medical legislative committees in furthering the bill before the last state legislature enabling us to develop a prepayment medical service plan sponsored and controlled by our profession. The co-op regional publications at that time lent all possible opposition at every turn. Many among our profession might accept their attitudes and recriminations, and virtually intimate that they should be allowed to blow off their steam and get rid of their gripes. This is not quite a Christian attitude to offer against those who "trespass" and obviously misunderstand. It is to be hoped that our own positive plans may be expedited, and that we may continue to demonstrate that as producers of service we are strictly imbued with the "best interests of the consumer," just as much, in fact, as are the purveyors and manufacturers of everything the public needs and desires in building up orderly living and comfortable existence. But ours must be a positive stand and not a passive reliance upon the accumulated prestige of past performance.

E.L.T.

Having thus disposed somewhat summarily of Compulsory Health Insurance, and agreed that our old and proven fee-for-service system of giving medical care is no longer capable of adaptation to our modern social-economic milieu, we have remaining to us the consideration of voluntary health insurance. It is my sincere belief that, given reasonable time, and freedom from governmental regulation and bureaucratic red-tape, voluntary health insurance can and will give more medical care, and much better medical care to more people than can ever be cared for under a regimented socialistic plan of national health insurance. It is quite true that thus far a not too impressive total of people are covered under such plans; that the coverage offered is not ideal and, that in general, voluntary plans cannot yet claim to have answered the problem. It is equally true that the American republic evolved by trial and error; that its early history portended failure and disaster, and that evolution is a much slower and less dramatic process than revolution, but that the evolutionary product is likely to be a better and sounder one than that which results from revolution. In a field in which there is only a meager amount of actuarial knowledge and a minimum of experience, haste must be made slowly, and this is no less true of compulsory than of voluntary health insurance. In a relatively short time, voluntary health plans have made astounding progress, and these plans are in their merest infancy. They offer good medical care, at prices that people can afford, and they give this care without bureaucracy or regimentation, in keeping with our American traditions and without offense to our American dignity. If seventy-one million Americans can be persuaded, without any element of compulsion, to buy life insurance, what reason is there to believe that they will not buy health insurance? And if they will not, will not this be convincing evidence that they do not wish to provide themselves, or to be provided with, prepaid medical care? And are we not still free men, and cannot we decide these things for ourselves, without paternal compulsion from an all-wise government?

Gentlemen: On the answer to these questions hangs not only the future of Medicine, but the future of America, the America in which we were reared. Liberty and its concomitant obligation to care for one's self is being weighed against alleged security and the inevitable loss of our freedom. Which we shall have is in our hands, and in the hands of our fellow Americans. Destiny awaits just around the corner, but destiny may still be altered by our will.—From "The Public Health, the Politician, and the Doctor," an address by Lowell S. Goin, M.D., F.A.C.R., presented at the Conference of Presidents and Other Officers of State Medical Associations, San Francisco, June 30, 1946.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COMMITTEE URGES ACTION ON FINANCING MEDICAL SERVICE

The Committee on Organization for Minnesota Medical Service on July 26 sent out a letter with a prospectus and pledge, asking the membership to co-operate in the financing of a Medical Service Plan for Minnesota. This material was sent out by the Committee, at the request of the House of Delegates, in order to inform Minnesota physicians fully as to the steps that the Committee had taken in the setting up of Minnesota Medical Service and as to the extent of its development to date.

The House of Delegates had also instructed the Committee to raise $100,000 before any further steps could be taken toward putting Minnesota Medical Service into actual operation; and so with the prospectus was sent a pledge asking for your co-operation. To date (August 19) there have been received only 225 pledges, totalling $31,050. These results, the Committee feels, are somewhat disappointing; and the Committee requests that those physicians who are planning to participate in the financing of Minnesota Medical Service kindly sign their pledges and send them in immediately.

Word has reached the Committee that some doctors are still confused as to the type of plan formally adopted. It wishes to point out that the plan adopted by the House of Delegates operates both as a service plan and as an indemnity plan, depending on the income of the subscriber. For those individuals who are in the lower income brackets, the physician agrees to provide the necessary surgical and medical care as stipulated in the contract. For that group of individuals whose income is over and above a certain amount, the physician charges his usual fee, and will receive from the organization the amount specified on the contract. The balance of his fee will be secured from the subscriber. In the higher income bracket, the organization has nothing to do with the establishment of fees.

At the present time the income figure which will serve as the dividing line between higher and lower income groups has not been set by the Committee, nor have the fees been established for the contract. When these details have been worked out, they will, of course, be submitted to the House of Delegates before any final action is taken.

MSMA DRAFTS OFFICIAL STATEMENT ON WAGNER-MURRAY-DINGELL BILL

The impossibility of having a representative of the Minnesota State Medical Association testify at the hearings on the Wagner-Murray-Dingell Bill conducted in Washington by the Senate Committee on Education and Labor has made it necessary for the Council to find an effective way to make known the official stand of Minnesota physicians on the measure to the Committee members.

The Council appointed Dr. M. M. Weaver and Dr. W. A. Coventry, who were to have represented the Association in Washington, to draft a comprehensive statement of the Association's views on S-1606. The statement when completed was submitted to the Council for its approval. This approval has now been given, and a letter containing the statement will be sent to each of the members of the Committee on Education and Labor.

The statement embodies both the approval of certain portions of the Wagner-Murray-Dingell Bill and the rejection of others. It crystallizes the reasons why the Association cannot sanction the use of compulsion as indicated in the bill, it endeavors to offer its own positive suggestions as alternatives and it also recognizes the fact that certain of the bill's provisions may prove effective aids in the solution of many problems in the field of public health, hitherto unsolved. Here is the statement as approved by the Council:

Favors Well-Considered Legislation

"The Minnesota State Medical Association is in favor of well-considered legislation which will benefit the health of the citizens of this state. It subscribes to the belief that adequate medical care should be available to all persons, regardless of race, color, financial status or place of residence. Such care should include the preventive, diagnostic and curative professional services which constitute modern, high quality medical care.

"The Minnesota State Medical Association believes that the attainment of this objective, insofar as it has not already been attained, should enlist the wholehearted support and enthusiasm of all concerned in the project: the doctors themselves, dentists, nurses, hospital administrators, all others who have to do with the care of the sick or with the conservation of health, and the public which receives health service.

"The Minnesota State Medical Association has examined Senate Bill 1606 in order to determine how effectively and satisfactorily its various proposals might bring about the improved medical care and other benefits to health which are the objectives of the proposed legislation."

Urgency of Some Provisions Noted

"The Association recognizes the timeliness and urgency of some of the provisions of this bill. It is glad to give its support to those portions of the bill which, if enacted into law, may solve certain problems that have proved difficult of solution. The Association gladly will join with lay and professional groups to recommend the proper implementation of governmental agencies seeking progress in the fields of public health, the medical care of the indigent and the adequate support of scientific research.

"With regard to part A of title one of Senate Bill 1606, the Minnesota State Medical Association believes that an extended program of disease prevention should be fostered at national, state and local levels. This should include all necessary federal aid to provide public health facilities and programs in communities at present inadequately supplied or not supplied at all. The plan to use federal funds to develop a more sanitary environment for our citizens should include the training of personnel to carry on the necessary program. However, the Association firmly believes that these activities should be under local control in conformity with standards as high as levels of intelligence, facilities for communication and so forth, within each locality will permit."

Evaluates Maternal and Child Health Provisions

"The objectives of part B of title one, namely, to enable each state to provide and maintain services and facilities for promoting the physical and mental health of mothers and children are considered by the Association to be most worthy of its support. But the Association favors federal grants-in-aid for the continuance and enlargement of the present Emergency Maternal and Infant Care program only as the need may be shown. It favors administration under the direction of the U. S. Public Health Service of the funds which may be made available for this purpose, in accordance with the policies and principles sponsored and approved by the State and Territorial Health Officers Association. Moreover, when a federal department of health is established, the program contemplated by Senate Bill 1606 should be provided within the federal department of health.

"The provisions of part C of title one for a medical care program for needy individuals through federal grants-in-aid to the several states fails to meet with the approval of the Association with regard to:

"(1) The payment to patients of cash benefits for medical care. The Association favors the provision of hospitalization and medical care to the indigent by local authorities with federal grants-in-aid administered, as need requires such aid, by a state administering agency. Local public authorities could make use of voluntary hospital and sickness insurance plans with more effective and economical results than could be obtained by distributing cash payments.

"(2) The allocation of funds for the health care of needy individuals by the Social Security Board. The Association favors the administration of grants-in-aid in this category by the U. S. Public Health Service, in accordance with practices and principles determined by the State and Territorial Health Officers Association, with final disbursement by a proper state agency. The administration of this program at the national level should rest with the federal department of health when this department is established."

Government Urged to Aid Research

"With regard to title two of Senate Bill 1606, the Minnesota State Medical Association wishes to endorse in principle the participation, through grants-in-aid, by the federal government in a program to encourage research leading to further conquest of illness, disability and premature death. However, these objectives are more adequately stated, and more detailed consideration of the financing of a program for medical education and research are incorporated in 'other legislation' which is before Congress at this time.

"With respect to the remainder of title two of this bill, which has to do with compulsory health insurance designated as Prepaid Personal Health Service Benefits, the Minnesota State Medical Association cannot endorse such compulsory health insurance. The Association believes that payment for his medical care is the direct responsibility of the individual whether he is able to make this payment either directly or on a prepayment basis. Although the Association is convinced that application of the insurance principle is the most effective method of obtaining the financial participation of the majority of the public in a program of improved medical care, it is also convinced that participation of the citizens of the State of Minnesota in any health insurance plan should be on a voluntary basis. This conviction, by the way, springs from a sincere solicitude for the national welfare and not for the financial welfare of the medical profession, as will appear below."

Advocates "Evolutionary" Processes

"The Association believes that the attainment of prepaid medical coverage for the citizens of this state must be an evoluntionary process and that it will require time. It believes that the interests of the public will be served best by encouraging this evolutionary process rather than by resorting to large-scale intervention by the government. The increase, in a few years, of voluntary prepaid hospital insurance in Minnesota encourages the Association to believe that the citizens of Minnesota can and will obtain the medical coverage they need on a voluntary basis when they are given the opportunity.

"The cost of voluntary health or sickness insurance never has been shown to be greater to the individual, amount and quality of benefits considered, than has been the cost of governmentally administered insurance for the same purpose. Furthermore, the Association is sure that it would be impossible to provide the quality of medical services which the citizens themselves desire and to which most of them already are accustomed if a governmentally-administered plan should be inaugurated.

"In summary: The Minnesota State Medical Association is opposed to the passage of Senate Bill 1606. At the same time, the Association voices its approval of the principles embodied in parts A, B, and C of title one, except as has been noted, and approves in principle the proposal that federal grants-in-aid shall be made available for the support of medical research."

"U" POSTGRADUATE PSYCHIATRY COURSE GETS NATIONAL ACCLAIM

An experimental postgraduate course in psychotherapy for the general practitioner held last April at the University of Minnesota was recently given national recognition by the Commonwealth Fund, New York. In a special report, released to medical societies, medical schools and public organizations throughout the nation, the course was acclaimed as valuable to the future teaching of the part played by personality in the treatment of physical ills.

The Commonwealth Fund report described the course as a meeting of 25 physicians for two weeks of intensive lectures, seminars and clinical sessions to seek answers to the following questions:

"Can doctors be taught to practice in their own offices the kind of medicine psychoneurotic patients need? Can they learn to use in all their practice the gist of what modern psychiatry has to say about human personality and the way it works? Can they get some idea of what comprehensive medicine means?"

Included in the teaching staff with prominent authorities in the field were several younger psychiatrists, many of whom had the benefit of recent war service and were ready to share their lessons in psychiatric rehabilitation with the men in general practice.

Among the immediate results of the course, according to the report, were the recognition of "new possibilities in the general practice of medicine . . . and a conviction on the part of most of the students that their usefulness and morale as physicians had been strengthened.

Tribute was paid to Dr. William A. O'Brien, University director of postgraduate medical education, for his part in making the course a success.

CONFERENCE STUDIES NATIONAL FEDERATION OF HEALTH PLANS

Two Harbors, Minnesota, was host August 15-18 to a national conference of co-operative health groups. This conference was held for the purpose of setting up a national federation of health plans and taking an official stand on national health plans that might be developed by the federal government.

Leaders in the movement who took an active part in the proceedings of the conference were Dr. Michael Shadid, founder-director of the Elk City, Oklahoma, community hospital; Dr. Elmer Richman, director of the St. Louis, Missouri, labor health institute, and Dr. Kingsley Roberts, director of Medical Administration Service, Inc., New York City.

Representatives of the American Medical Association and the Wisconsin and Minnesota State Medical Associations were present at the meetings merely as observers, taking no active part in the discussions. A résumé of what took place at the conference will be given in greater detail in the next issue of Minnesota Medicine.

All the strength and force of man comes from his faith in things unseen. He who believes is strong; he who doubts is weak. Strong convictions precede great actions.—*J. F. Clarke.*

Minneapolis Surgical Society

Stated Meeting Held April 4, 1946

The President, Robert F. McGandy, M.D., in the chair

INTRA-ARTERIAL PENICILLIN THERAPY FOR INFECTIONS OF THE EXTREMITIES

J. ORDIE SHAFFER, M.D.
Minneapolis, Minnesota

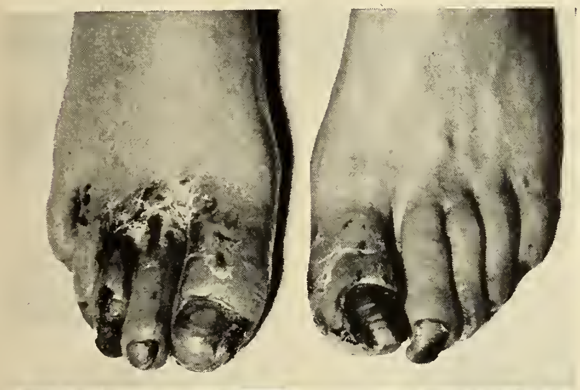
Since the advent of the anti-biotics, it has been possible to manage infections much more successfully and with less attendant difficulty. Penicillin has been demonstrated to be effective against most strains of three of the most common causes of surgical infections: the hemolytic streptococcus, staphylococcus aureus, and the clostridium welchii. The problem is complicated, however, by the fact that although a penicillin level may be attained in the serum which will inhibit the causative organisms, in a local lesion the impermeability of the wall of the abscess cavity may exclude the penicillin from the local area and prevent successful therapy. The problem, therefore, resolves itself into methods of getting the penicillin into the involved area so that it can be effective. The failure of penicillin in a local infection when administered by the intramuscular or intravenous routes has been repeatedly demonstrated. Thus penicillin must be given within the pleural cavity in an empyema to be effective since penicillin is not able to penetrate the local tissue barrier presented by the pleura. Within the last year several cases of purulent pericarditis have been reported which were resistant to intramuscular penicillin but responded well to local penicillin injected within the pericardial cavity. Thus normal tissue barriers may prevent intravenous or intramuscularly administered penicillin from being effective. In other cases involvement of a large area separated by numerous fascial and bony pockets such as in diabetic gangrene prevents the local use of penicillin and some other means of obtaining a high local concentration is desired. This is well met in the extremities by the intra-arterial administration of pencillin which provides a higher local concentration than obtainable by the intravenous or intramuscular methods. The use of this method dates back to 1914 when Heddaus in Germany injected anti-tetanic serum into the carotid arteries to obtain a higher local concentration within the cerebral tissues. Goyannes in Spain injected a cyanate solution into the arteries of the extremities for tuberculous joints. The method has been used periodically since then and during recent years has been popularized by Dos Santos of Portugal. E. Brancho Ribeiro of Brazil was the first to give intra-arterial penicillin. He had also used sulfonamides intra-arterially with success and noted the course of the infection was markedly speeded up by this method. He predicted the same for penicillin and this has subsequently proven true. Glasser and his associates gave intra-arterial penicillin using the stasis technique of Dos Santos in which a blood pressure cuff placed proximally on the extremity is inflated to 280 mm. Hg. following the intra-arterial injection. He had good results in these cases.

At the University Hospital the following technique of intra-arterial injection has been used in the treatment of thirty odd cases. An empirical dosage of 50,000 units of penicillin in 10 c.c. of normal saline is used in all cases. A 20 c.c. syringe with a 2-inch No. 20 needle is used for injection. A blood pressure cuff is placed just above the knee or elbow and the cuff pumped to 60 to 80 mm. of Hg. prior to starting the injection. With the physician standing at the right side of the patient, the point of maximum pulsation of the femoral artery is located just below the inguinal ligament. The artery is then stabilized with the index and middle fingers of the left hand and the needle entered through the skin in a plane perpendicular with the thigh. The needle is advanced until a bright red pulsating stream of blood is noted in the syringe and the penicillin is then injected at a rate of 1 c.c. per second. Pressure is maintained over the area of infection for a few seconds immediately after withdrawal of the needle to obviate any possible hematoma formation. The cuff is maintained at 60 to 80 mm. of mercury for ten minutes, during which time the venous return is occluded and the propulsive force of the arterial blood forces the penicillin into the tissues. However, when procaine (novocaine) and penicillin are given intra-arterially for anesthesia, the cuff is pumped to 280 mm. Hg. following the injection for hemostasis during the subsequent operative procedure.

As additional adjuvant measures in gangrenous extremities, 1 grain of papaverine is given hypodermically twenty minutes prior to each injection to aid in the vasodilatation and 1 to 9,000 potassium permangate foot soaks are used during this interval prior to injection to aid in cleansing up the skin and to facilitate drainage.

Intra-arterial penicillin speeds up the course of infection in the extremities and shortens the recovery period as compared to therapy by intravenous or intramuscular penicillin. The following case illustrates this point:

Case 1.—A 50-year-old chronic alcoholic was admitted to the University Hospital with a cellulitis of the feet with multiple ulcerations (Fig. 1). Culture of the exudate revealed hemolytic streptococci present. The patient was not running a septic course, however, so he was treated by conservative measures including bedrest and a high caloric, high vitamin diet for three days to evaluate the course of the infection. Little improvement in the cellulitis occurred during this interval, so two intra-arterial injections of 50,000 units of penicillin each were given with the cuff pumped to 80 mm. Hg. before and for 10 minutes following each injection. Within forty-eight hours the cellulitis had completely disappeared, illustrating the rapid subsidence of infection which occurs with this method of therapy (Fig. 2).



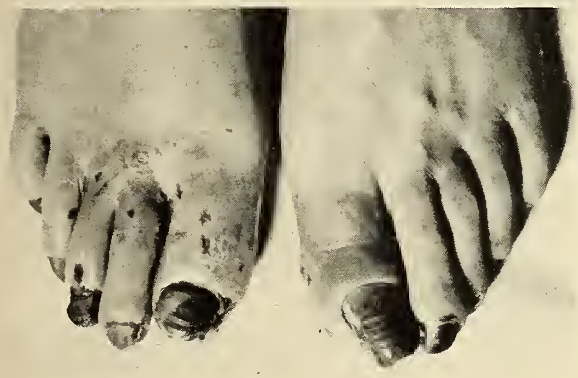
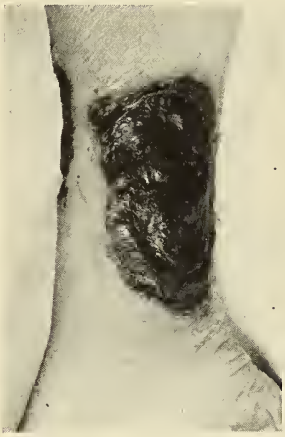


Fig. 1. *(above)* Streptococci cellulitis with ulcerations of feet present in Case 1 after three days of conservative therapy.

Fig. 2. *(below)* Streptococci cellulitis absent within forty-eight hours after two intra-arterial penicillin injections.

Chronic ulcers which were resistant to various other forms of therapy responded well to intra-arterial penicillin. Topical application of medicaments frequently fails because of poor penetration into the area. Intravenous or intramuscular penicillin also frequently fails because of the same reason. The intra-arterial method of administration of penicillin more adequately overcomes the obstacles of brawny induration and poor vascularity as the concentrated penicillin is forced into the tissues by the propulsive arterial force. Thus, it is possible to prepare varicose ulcers for skin grafting in a short interval by this method.

Case 2.—A sixty-five-year-old woman was admitted to the University Hospital last week with large ulcerations of the right lower leg (Fig. 3). Cultures revealed coagulase positive staphylococci present. The ulcers were debrided using intra-arterial procaine-penicillin anesthesia. Twenty-five c.c. of 2 per cent procaine solution with 50,000 units of penicillin added was injected into the right femoral artery and a blood pressure cuff placed proximally just above the knee inflated to a pressure of 280 mm. of mercury immediately after the injection. The patient had no pain or discomfort during the procedure. Thus anesthesia, chemotherapy, and hemostasis were all accomplished at the same time by this procedure. Subsequently, the patient received daily intra-arterial penicillin injections for four days with the blood pressure cuff pumped to 80 mm. Hg. before and for 10 minutes following the injection. At present a clean granulating base is present and the ulcer is ready for skin grafting (Fig. 4).



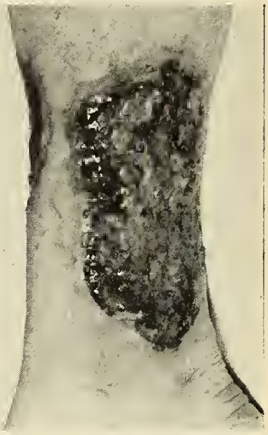


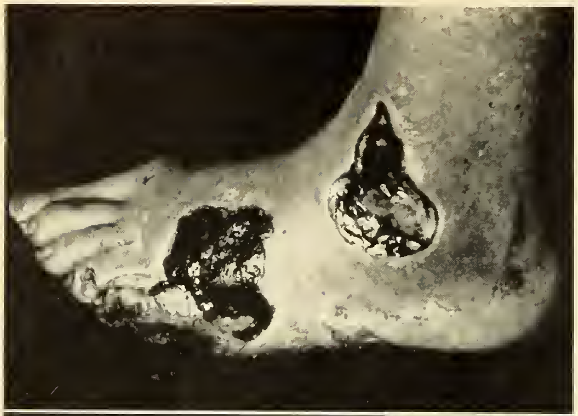
Fig. 3. *(left)* Gangrenous ulcerations of left lower leg in Case 2 prior to therapy.

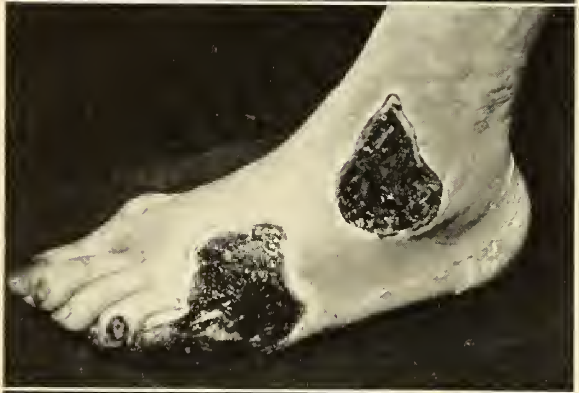
Fig. 4. *(right)* Clean non-infected ulcerations present after debridement and intra-arterial penicillin therapy.

Case 3.—A seventy-six-year-old man was admitted to the University Hospital with infected gangrenous ulcerations over the dorsal lateral half of the left foot and the left lateral malleolus which developed after his right foot had been run over by an automobile. X-ray revealed no fractures, but an osteomyelitis was present in the distal and middle phalanges of the left fifth toe. Cultures of the gangrenous areas revealed hemolytic streptococci, coagulase positive staphylococci, and proteus to be present. The areas were debrided painlessly after intra-arterial procaine-penicillin anesthesia had been given, injecting 25 c.c. of 2 per cent procaine with 50,000 units of penicillin added and then pumping the proximally placed cuff to 280 mm. of mercury. All cellulitis had disappeared and no infection was present in the base of the ulcers twenty-four hours later (Fig. 6). An additional intra-arterial injection of penicillin was given on each of the next two days and split-thickness skin grafts placed over the area and a plaster cast applied on the third day. Two intra-arterial injections were given during the first two postoperative days and 95 per cent of the upper graft and 80 per cent of the lower graft took (Fig. 7). At present the foot has almost completely epithelialized. This case illustrates the usefulness of intra-arterial procaine-penicillin which permits a debridement without discomfort and acts later in the effective chemotherapeutic control of infection, permitting successful skin grafting on an infected gangrenous area within a few days.

Gangrene with associated infection due to frostbite responds very well to intra-arterial penicillin therapy. The gangrene in these cases is usually superficial and the deep vessels are intact, so the control of infection allows a more conservative demarcation of tissue.

Case 4.—A fifty-one-year-old man was admitted to the University Hospital with an infected wet gangrene and cellulitis of the distal half of the right foot resultant





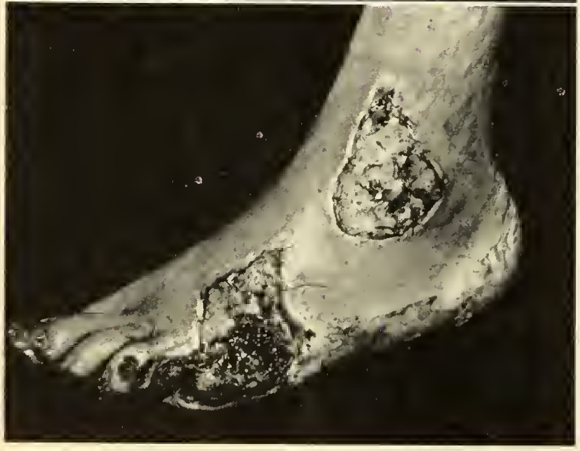
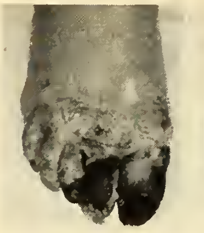
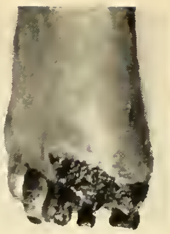


Fig. 5. *(upper)* Infected gangrenous ulcerations and cellulitis of foot of Case 3 prior to therapy.

Fig. 6. *(center)* No evidence of cellulitis and infection after twenty-four hours of therapy in Case 3.

Fig. 7. *(lower)* Condition of foot in Case 3 with skin grafts taken after eight days of therapy.





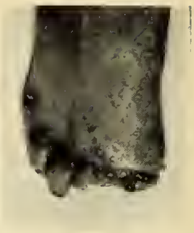


Fig. 8. *(left)* Wet gangrene and cellulitis of foot in Case 4.

Fig. 9. *(center)* Foot in Case 4 after disarticulation and conservative debridement.

Fig. 10. *(right)* Stump in Case 4 almost epithelialized.

from frostbite three weeks previously (Fig. 8). Cultures revealed hemolytic streptococci and proteus to be present. Fortunately, the other three extremities had only mild changes. He was given four intra-arterial penicillin injections together with papaverine and foot soaks over eleven days and the infection was controlled and an area of dry gangrene demarcated. Intra-arterial procaine-penicillin anesthesia was used giving 25 c.c. of 2 per cent procaine with 50,000 units of penicillin added, and subsequently pumping the blood pressure cuff to 280 mm. of mercury. A disarticulation of the interphalangeal joint of the great toe and at the distal interphalangeal joint of the second and third toes was performed without any pain or discomfort to the patient (Fig. 9). Two more intra-arterial injections were given over five days and the distal half of the protruding phalangeal bones then amputated under intra-arterial procaine-penicillin anesthesia. Two days later, pinch grafts were applied over the stump, and ten days later the stump was almost epithelialized (Fig. 10). Thus by the control of infection through the use of intra-arterial penicillin, it was possible to save a maximum amount of the extremity and intra-arterial procaine-penicillin anesthesia provided an efficient anesthesia for operation on the extremity.

The present method of therapy has been especially useful in diabetic gangrene since infection so frequently plays a major role. Diabetes is always attended by a more rapid development of arteriosclerosis than in the non-diabetic individual, but among the diabetics themselves, there is a marked variation in the degree of arteriosclerosis. Thus under the single heading of diabetic gangrene, we find typical cases of dry gangrene in which vascular incompetence is the major problem and at the other extreme infection in the presence of a good circulation.

Penicillin therapy will do the most for cases with adequate circulation. In cases with impaired circulation, the progressive intimal thickening of the arteries is compensated for by collateral circulation until infection increases. The metabolic demands of the tissue cells increase and gangrene supervenes. Unless the infection can be controlled, more and more of the tissue is unable to meet the demand and a spreading gangrene results. An early high amputation is attended by a high mortality, and there is excessive loss of tissue. With intra-arterial penicillin, however, control of the infection is possible and the circulation is frequently again adequate so that time can be given to the proper preparation of the patient. Amputation is considered only after the patient has maintained a temperature below 99.6° for three days, the gangrene is well localized, and there is no surrounding inflammation in the normal tissue. At this time after evaluation of the competence of the blood supply, an elective procedure can be done at a lower mortality rate and probably at a lower amputation level. Primary closure can be done safely since with the source of infection arrested, the infection in the lymphatics above can ing is pre-

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was given twenty intra-arterial penicillin injections over thirteen days. The areas of defect grew in well and by three weeks the plantar ulcer had healed. The remaining dorsal defect was pinch grafted at this time and nine-tenths of the pinch grafts took. Eleven days after the grafting, the foot was well healed. The patient has been ambulatory and has had no further difficulty in the intervening four months since his discharge from the hospital (Fig. 11).

In this case, intra-arterial penicillin completely controlled the infection in a diabetic wet gangrene and amputation was avoided. Elimination of infection made subsequent healing of the foot possible and skin grafts grew well on a surface which had previously been gangrenous and infected.

In summary, the intra-arterial route of penicillin therapy overcomes the factors of vascular impairments and the permeability of the wall of a local abscess cavity better than the intravenous or intramuscular methods of administration. In addition, the method is more economical and rapid in its effect than the other methods of penicillin therapy. The technique of injection is simple and there have been no complications in any of the cases treated. The only contra-indication to the method is a locally infected area over the site of injection. Intra-arterial procaine-penicillin is presented as an efficient method for simple local surgery of the extremities, whereby anesthesia, hemostasis, and chemotherapy are all obtained by a single procedure. It is hoped that the favorable results obtained by these methods will stimulate the further use of intra-arterial penicillin therapy of infections of the extremities.

Discussion

Dr. Harvey Nelson: Would Doctor Shaffer mind describing how he put the blood pressure cuff on and how long it is kept on?

Dr. Shaffer: The blood pressure cuff is placed proximally on the extremities; in the lower extremities at a site just above the knee with the center of the cuff placed medially over the thigh and then applied around the leg in the usual manner. In the case of the arm, the blood pressure cuff is similarly applied just above the elbow with the center of the cuff on the medial side of the arm. The blood pressure cuff is inflated to a value of 60 to 80 mm. of mercury prior to the time the injection is done. The injection is then done and the blood pressure cuff maintained at 80 mm. Hg. for a period of ten minutes to assure that the penicillin is forced into the tissues. When intra-arterial procaine-penicillin anesthesia is used, the blood pressure cuff is further inflated to 280 mm. Hg. after the injection and hemostasis is also obtained in addition to anesthesia and chemotherapy.

Dr. N. K. Jensen: You inflate it to 280 after making the injection?

Dr. Shaffer: The injection is done at the rate of 1 c.c. per second while the cuff is at 60 to 80 mm. Hg. and subsequent to that the blood pressure cuff is further inflated to 280 mm. Hg. whenever procaine-penicillin solution is injected. When penicillin alone is injected the blood pressure cuff is inflated to 80 mm. Hg. prior to the injection and then simply maintained at 80 mm. Hg. for ten minutes following the injection.

Dr. R. J. McGandy: How long does the anesthesia last?

Dr. Shaffer: It lasts at least fifteen minutes and in local amputations the procedure usually takes ten to fifteen minutes. For ten to fifteen minutes following the release of the cuff, there is definite difference in sensation between the two extremities. However, in these short procedures, it is usually advisable to keep the blood pressure cuff inflated during the procedure to assure that none of the procaine escapes from the local area.

Dr. Harvey Nelson: Where do you inject in the arm?

Dr. Shaffer: The arm is injected either in the brachial artery in the antecubital space or between the brachial and axillary artery in the axilla. The most prominent pulsating artery is a good site. Injection in the axilla is more difficult because of the large nerve trunks in the vicinity. When an injection is done in the axilla, the site of most prominent arterial pulsation is located with the patient's arm extended at right angles to the body. The injection is then done with the needle at right angles to the surface of the axilla. An injection in the antecubital space is also done at the site of maximum pulsation, but the injection is done in a more oblique plane similar to an intravenous injection.

Dr. Kenneth Bulkley: Have you used intra-arterial penicillin on acute hematogenous osteomyelitis of the tibia?

Dr. Shaffer: We have had no cases of that type. However, in view of the favorable experience with chronic osteomyelitis, it should be effective since chemotherapy is more efficacious in acute osteomyelitis.

Dr. A. F. Bratrud: How about acute infections of the hand?

Dr. Shaffer: The results have been very encouraging. In one of the cases treated, it was possible to

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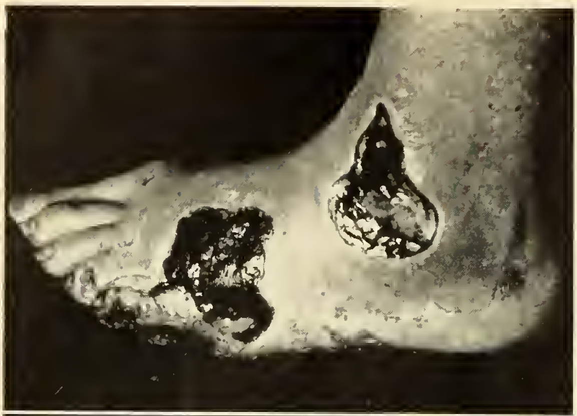

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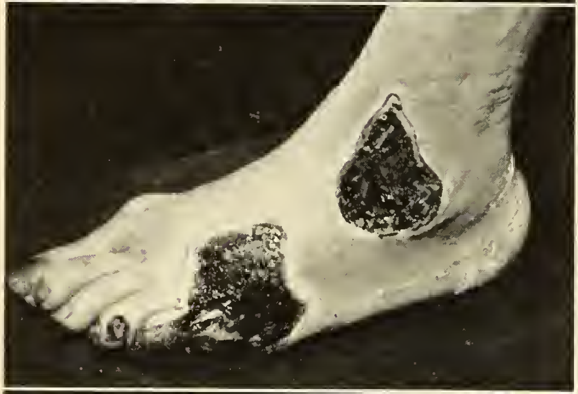

Fig. 6. *(center)* No evidence of cellulitis and infection after twenty-four hours of therapy in Case 3.

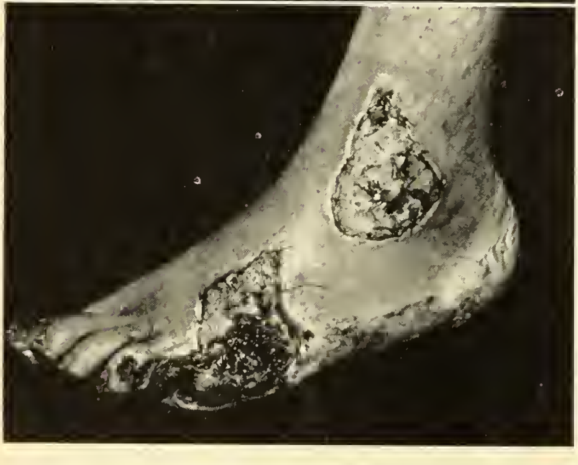

Fig. 7. *(lower)* Condition of foot in Case 3 with skin grafts taken after eight days of therapy.

from frostbite three weeks previously (Fig. 8). Cultures revealed hemolytic streptococci and proteus to be present. Fortunately, the other three extremities had only mild changes. He was given four intra-arterial penicillin injections together with papaverine and foot soaks over eleven days and the infection was controlled and an area of dry gangrene demarcated. Intra-arterial procaine-penicillin anesthesia was used giving 25 c.c. of 2 per cent procaine with 50,000 units of penicillin added, and subsequently pumping the blood pressure cuff to 280 mm. of mercury. A disarticulation of the interphalan-

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Case 5.—An elderly diabetic man had a wet gangrene with pitting edema and erythema of the entire left foot. Gangrenous ulceration was present on the dorso-lateral half of the foot, and a deep necrotic ulcer was present at the base of the left fifth metatarsal. Cultures revealed hemolytic streptococci and coagulase negative staphylococci. Debridement was done and the patient was given twenty intra-arterial penicillin injections over thirteen days. The areas of defect grew in well and by three weeks the plantar ulcer had healed. The remaining dorsal defect was pinch grafted at this time and nine-tenths of the pinch grafts took. Eleven days after the grafting, the foot was well healed. The patient has been ambulatory and has had no further difficulty in the intervening four months since his discharge from the hospital (Fig. 11).

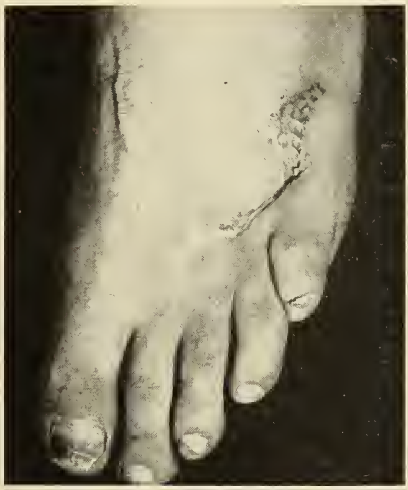

Fig. 11. Healed foot in Case 5. Note skin grafts which grew well on a previously infected gangrenous surface.

In this case, intra-arterial penicillin completely controlled the infection in a diabetic wet gangrene and amputation was avoided. Elimination of infection made subsequent healing of the foot possible and skin grafts grew well on a surface which had previously been gangrenous and infected.

In summary, the intra-arterial route of penicillin therapy overcomes the factors of vascular impairments and the permeability of the wall of a local abscess cavity better than the intravenous or intramuscular methods of administration. In addition, the method is more economical and rapid in its effect than the other methods of penicillin therapy. The technique of injection is simple and there have been no complications in any of the cases treated. The only contra-indication to the method is a locally infected area over the site of injection. Intra-arterial procaine-penicillin is presented as an efficient method for simple local surgery of the extremities, whereby anesthesia, hemostasis, and chemotherapy are all obtained by a single procedure. It is hoped that the favorable results obtained by these methods will stimulate the further use of intra-arterial penicillin therapy of infections of the extremities.

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Dr. Shaffer: The injection is done at the rate of 1 c.c. per second while the cuff is at 60 to 80 mm. Hg. and subsequent to that the blood pressure cuff is further inflated to 280 mm. Hg. whenever procaine-penicillin solution is injected. When penicillin alone is injected the blood pressure cuff is inflated to 80 mm. Hg. prior to the injection and then simply maintained at 80 mm. Hg. for ten minutes following the injection.

Dr. R. J. McGandy: How long does the anesthesia last?

Dr. Shaffer: It lasts at least fifteen minutes and in local amputations the procedure usually takes ten to fifteen minutes. For ten to fifteen minutes following the release of the cuff, there is definite difference in sensation between the two extremities. However, in these short procedures, it is usually advisable to keep the blood pressure cuff inflated during the procedure to assure that none of the procaine escapes from the local area.

Dr. Harvey Nelson: Where do you inject in the arm?

Dr. Shaffer: The arm is injected either in the brachial artery in the antecubital space or between the brachial and axillary artery in the axilla. The most prominent pulsating artery is a good site. Injection in the axilla is more difficult because of the large nerve trunks in the vicinity. When an injection is done in the axilla, the site of most prominent arterial pulsation is located with the patient's arm extended at right angles to the body. The injection is then done with the needle at right angles to the surface of the axilla. An injection in the antecubital space is also done at the site of maximum pulsation, but the injection is done in a more oblique plane similar to an intravenous injection.

Dr. Kenneth Bulkley: Have you used intra-arterial penicillin on acute hematogenous osteomyelitis of the tibia?

Dr. Shaffer: We have had no cases of that type. However, in view of the favorable experience with chronic osteomyelitis, it should be effective since chemotherapy is more efficacious in acute osteomyelitis.

Dr. A. F. Bratrud: How about acute infections of the hand?

Dr. Shaffer: The results have been very encouraging. In one of the cases treated, it was possible to cause a felon of the thumb to subside without incision after only one intra-arterial injection of 50,000 units of penicillin.

Dr. Kenneth Bulkley: Have you treated any acute suppurative tenosynovitis?

Dr. Shaffer: No, but Doctor Glasser has reported a case of acute tenosynovitis probably due to a gonococci in a colored woman with concomitant pelvic inflammatory disease. After one intra-arterial injection of 50,000 units of penicillin, she had complete subsidence of the infection without incision and no subsequent limitation of motion resulted.

Dr. S. R. Maxeiner: I would like to throw out a word of caution on placing 25 c.c. of 2 per cent novocain in the circulation. Novocain, intravenously, is its most toxic dose; intra-arterially is the next most toxic. Some of you will recall Doctor Strachauer's paper given before the Hennepin County Medical Society when he warned about the toxicity of intra-arterial novocain. He had used intra-arterial anesthesia in amputations and left the ends of the vessels open to permit the novocain to run out before removal of the tourniquet. Fatalities have been reported from intravascular injections of novocain. When I was with Doctor Farr years ago, we used intravenous and intra-arterial anesthesia in a number of cases but we seldom used that technique. In one case of brachial anesthesia, we used 10 c.c. of 2 per cent novocain and the patient got an intravascular dose and nearly expired in the office. The second one was a man who had an operation for disease in his foot. We did an intra-arterial injection on the dorsum of the foot and again, nearly had an accident. The injection was done with a tourniquet proximally, and when it was removed, the patient suddenly went into collapse. I believe in such instances the tourniquet should be removed slowly, similar to instructions given in Red Cross work in which the poison of a snake bite is controlled by use of tourniquet which may be slowly removed, admitting only minimal doses of toxin to enter the general circulation. Twenty-five c.c. of 2 per cent novocain is equivalent to almost 2 ounces of 1 per cent novocain which may be lethal if given directly into the circulation.

Dr. Shaffer: I think Doctor Maxeiner's comment is merited when the rapid intravascular injection of procaine without stasis is used. However, with the stasis technique of injection, a large portion of the penicillin is fixed in the tissues and it is slowly released after the tourniquet is removed. Goyannes noted marked difference in the patient's response to injection of procaine with and without stasis. With the intra-arterial injection of procaine and no stasis, Goyannes obtained no anesthesia and an occasional toxic reaction was noted. However, when procaine was given intra-arterially into an extremity and then a proximal tourniquet applied for stasis, he obtained anesthesia and no concomitant toxic phenomena were noted. Similarly, no toxic reactions were encountered in any of our cases when stasis by a blood pressure cuff was used for ten to fifteen minutes following the intra-arterial injection.

Dr. Maxeiner: The intravenous dose of novocain is probably the most toxic. Intra-arterially, novocain is partially detoxified when it passes through the capillaries before it reaches the general circulation.

Dr. H. A. Alexander: Doctor McPheeters was unable to be here tonight and asked me to describe briefly a procedure, somewhat related to that of Doctor Shaffer, which we have been using in a few selected cases.

We are mixing the penicillin with the sylnasol used as sclerosing agent for varicose veins, either in the retrograde injection at the time of a ligation, or in the injections at the office. We are not using the penicillin addition as a routine, but only in those cases with (1) recurring or recent phlebitis: (2) cellulitis; (3) furunculosis, folliculitis or other skin infection; and (4) in those cases with infected varicose ulcers. Fifty to 100,000 units of pencillin are dissolved in the saline with which we dilute the sylnasol from full 5 per cent strength to half strength. It is best used with empty vein technique. By elevation the vein is emptied of blood. The table is then tilted to a reverse Trendelenberg and the solution injected and allowed to run by gravity into the lower leg. The penicillin is thus incorporated in the thrombus caused by the sylnasol and we have our bacteriostatic agent fixed, inside the vein, at or close to the focus of infection.

As far as we know this procedure has not been reported anywhere. We have only done it twelve times at the time of ligation and three or four times with the office injections, but the results have been so uniformly better than we would have expected without the penicillin that we are quite enthused about its possibilities.

Dr. R. J. McGandy: Is intra-arterial penicillin better than retrograde at the time of ligation in cases of phlebetic ulcer?

Dr. Schaffer: It is advantageous to clear up the infection in the ulcer by intra-arterial penicillin prior to saphenous ligation as surgery is more likely to be complicated by a wound infection with a source of suppuration present on the extremity. After control of the infection by intra-arterial penicillin, a saphenous vein ligation can be done with better assurance of primary healing of the wound. We have also injected penicillin solution retrograde into the vein at the time of operation as an additional measure.

Dr. N. K. Jensen: I would like to ask Doctor Shaffer whether the effect of procaine (novocain) on the activity of penicillin has been studied?

Dr. Shaffer: Yes, I consulted with Doctor Spink in that respect and he tells me that procaine has no effect on the efficacy of penicillin. Procaine was advantageously used with penicillin in the local injection technique and excellent results obtained by using penicillin mixed with 2 per cent procaine solution. In one case, a procaine-penicillin mixture was infiltrated by multiple injections throughout a carbuncle on the side of a woman's forehead. Two injections of 50,000 units of penicillin in 20 c.c. of 2 per cent procaine were made and within forty-eight hours the infection in the carbuncle subsided without any need for operation. Thus an excellent therapeutic and cosmetic result was attained, whereas the usual gridiron incision would have been disfiguring to the woman.

Dr. R. J. McGandy: Has any work been done at the University with saline injections and hyperemia?

Dr. Shaffer: No, we have not done that, but the benefit of venous hyperemia as a means of increasing collateral circulation has been recognized, and in several of the cases, the venous hyperemia which accompanies intra-arterial injection technique was thought to have effected a favorable influence on the collateral circulation.

Dr. Maxeiner: I see no objection to the general use of intra-arterial penicillin, but I believe that it might be extremely hazardous to advocate intravenous novocain in general practice. I wish it understood that these remarks are not in criticism of the work of Doctor Shaffer as I would like to compliment the author on a very fine piece of work.

A NEW TYPE OF WALKNG IRON

Historical Review of the Ambulatory Treatment of Leg Fractures

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In place of giving the customary case history before this society, I should like to present instead a new type of walking appliance for the ambulatory treatment of fractures of the lower extremity. This new walking iron has two or three features which, I believe, merit our consideration. I feel that I may recommend and praise this device as it is not my "brain child." In fact, I claim no credit for it, as it was the idea of one of my patients who had the misfortune to fracture his tibia. While wearing the customary short leg cast he conceived the idea of this new appliance. It was the instability of the U-shaped walking iron which prompted him to see if he could make a better one. I believe that this purpose has been accomplished, for the iron has several features which should recommend it to you. First and foremost, it presents much more stability for the patient in walking on waxed, terraza, linoleum and tiled floors. Second, it has a cleat which can be applied or removed in a few seconds when used in the winter months on icy pavements. As far as I can learn, this is a new feature which has never before been incorporated into any walking device. In the third place, it is as easily applied to the plaster cast as the ordinary U-shaped walking iron. In fact, it is merely a modification of this iron with the added feature of greater stability on uneven and slippery ground.

Before describing this iron in detail and showing a few pictures of the device in action, I should like to briefly review with you the historical development of the ambulatory treatment of fractures of the lower extremity with special emphasis on the development of the weight-bearing end of these walking casts.

The treatment of fractures goes back at least five or even ten thousand years, as is evident by the Nubian Excavations. Specimens from these excavations are in the Museum of the Royal College of Surgeons in London. These specimens show united and ununited fractures covered by coarsely woven cloth and splinted by the stems of palm leaves and pieces of wood. The written details of these cases are lacking, but the evidence is there for anyone to see.

Coming to historical times, one finds that 2,500 years ago Hippocrates in the fourth and fifth centuries before Christ had a profound knowledge of fractures and their treatment. If we read the chapters on fractures and dislocations in the Hippocratic Corpus, we are impressed with the keen observations and logical deductions which were made in those times, when we consider that an exact knowledge of anatomy, as we know it today, was entirely lacking. Hippocrates and his students described their methods of fracture reduction and the manner of applying bandages and splints in extremely precise detail. They recognized the necessity for careful reduction, immobilization and early restoration of the limb to its normal use. Hippocrates allowed his patient to be up and out of bed on the twentieth day following simple fractures of the ankle or fibula.

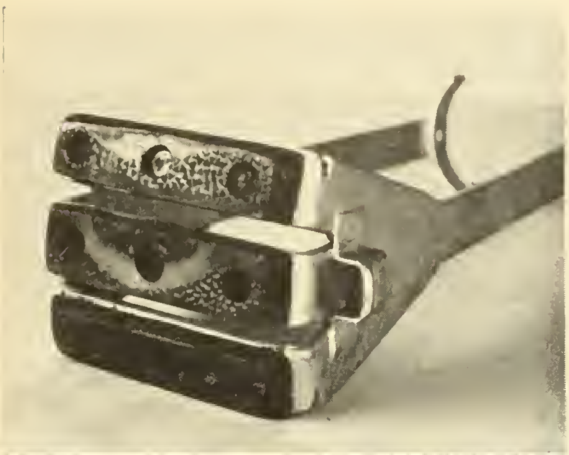
In those cases in which there was dislocation of the ankle or displacement of the fragments he felt that forty days of bed rest were enough. Had he had a good plaster of Paris cast to rely on, I am sure he would have allowed his patients up and about as soon as the swelling had subsided, which, according to him, was in about seven days. However, he had no rigid material at his disposal but he did incorporate "cerase" into his bandages to reinforce them. This substance may have been a bleached wax or possibly a flour. Exactly what "cerase" was we do not know, as he failed to describe its source or composition. It gave, however, only a semi-solid consistency to his bandages and splints.

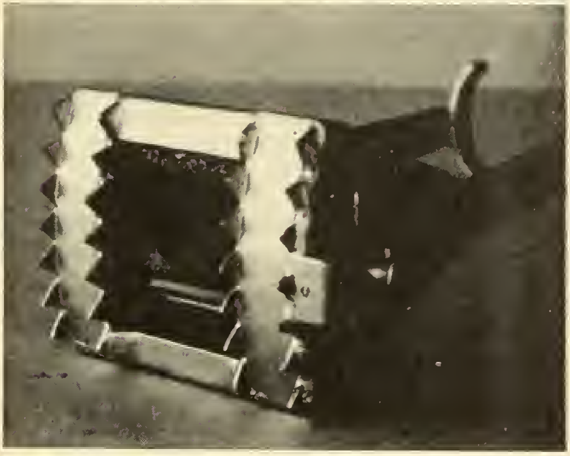
In the second century A.D., Galen advocated essentially the same treatment for fractures as did the father of medicine seven hundred years before him. He emphasized Hippocrates' teachings by stating that "It should be kept in mind that exercise strengthens and inactivity wastes." He too had no rigid cast material and therefore could not advocate the ambulatory treatment of fractures.

Between these early times and the beginning of the nineteenth century man sought to find just such a rigid material which would neither expand nor contract when it hardened. None was found until plaster of Paris was discovered about the end of the eighteenth century. In 1798 it was first reported in use by the Arabs for the treatment of fractures. Shortly thereafter it was introduced into Europe by Hubenthal and by Koyl and Klug in Berlin. Until the middle of the nineteenth century it was applied only in the form of a mold. The extremity after reduction was placed in a box and the wet plaster poured into the box around the limb until it had hardened. The limb with its bulky cast was then removed from the box. The disadvantages of this method can easily be seen. It was not easy to apply, it was heavy when on and it was difficult to remove. In 1852 a Flemish surgeon, Mathijsen by name, suggested the incorporation of the anhydrous calcium sulfate into the meshes of the bandages, as Hippocrates had done with his "cerase" more than two thousand years before. From then on the use of plaster of Paris quickly became widespread throughout the world. Nevertheless, the ambulatory treatment of fractures was not employed right away, for it was almost forty years later before such treatment was suggested. The first to advocate it for the treatment of fractures of the leg was Krause of Berlin in 1891. Dollinger of Budapest reported three cases in 1893. Warbasse of Brooklyn, New York, hearing of Dollinger's work, tried it on six cases in the same year. The next year Korsch in Bardeleben's Clinic reported 116 cases before the German Surgical Congress and from then on the ambulatory treatment of fractures became quite general throughout the world.

As far as I have been able to ascertain these first casts were walked upon by the patients just as they were applied. It soon became evident that the sole and heel of the cast needed strengthening and this was done by adding ten to twelve additional plasters to the sole of the cast as advocated by Bardeleben, who reported a total of 181 cases in 1895.

The first mention of a walking iron or device to protect the sole of the cast, I am pleased to state, was reported in the literature in 1900 by Dr. Frederick Rustin, whose paper on "The Ambulatory Treatment of Fractures" was read before the tenth annual meeting of the Western Surgical Society here in Minneapolis on December 27, 1900. Dr. Rustin in his paper gives credit to Dr. Finley R. Cook of New York, who first designed and used the U-shaped walking iron in 1898 at the Presbyterian Hospital in New York. This iron, as he described it, is exactly the same as the one which we still use today, the only difference being that we have now added a piece of rubber to the bottom in order to add to its stability.





1. Weight-bearing end of walking iron, showing details.

2. Weight-bearing iron, showing metal cleat applied for walking on slippery ground.

From this time on, the ambulatory treatment became a well recognized method in properly selected cases. By 1920 Boehler of Vienna had removed most of the objections to the walking cast when he was able to show the world that skin tight plaster casts could be used with impunity without causing pressure sores.

Since the invention of Dr. Finley Cook's U-shaped walking iron numerous other types of devices have been suggested and used. Many of these suggestions were the out-growth of metal shortages during the first and second World Wars. To briefly name a few of these: wooden rockers attached to wooden soles and applied to the cast with plaster have been used extensively both in England and Germany during this past war. Bottle corks and rubber heels have been used and attached by means of moleskin or webbing incorporated into the cast. Rubber crutch tips, singly, and in pairs, with and without spring suspension have been applied to the U-shaped irons and the other more elaborate devices.

However, the walking appliance which I wish to present is relatively simple and inexpensive as are shown in the illustrations. It is primarily a modification of Dr. Cook's U-shaped iron with merely the addition of another crossbar in front and one behind the central crossbar. Each of these additional bars is tilted at a slight angle so that as one walks he first places his weight on the posterior crossbar, then the central and next the anterior bar. The action is that of a rocker. As one walks on this iron he merely rocks forward, but as he rocks he always has his weight on a flat surface and not on a curved one as is the case in the usual rocker type of walking device. By simple application of a cover with metal teeth, the patient has a walking cleat which grips the icy pavements and is safe in winter weather in these northern latitudes.

Illustrations show the walking iron without the metal cleat attached (Fig. 1) and with it attached (Fig. 2).

Credit for the development of this device goes to Mr. Kenneth Hahn who has already patented this iron and is now manufacturing it in some of the lighter metal alloys. The original devices were made by him using ordinary strap iron.

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ACUTE NON-MALIGNANT PERFORATIONS OF THE COLON

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Acute non-malignant perforations of the colon are of rather infrequent occurrence. They do however appear often enough to make a consideration of the condition worth while. In reviewing the literature on this subject one is impressed with the small amount of material available. A few articles have appeared on perforations complicating diverticulitis and ulcerative colitis, those due to foreign bodies, non-penetrating abdominal trauma and increased intraluminal pressure, and while no figures are available the impression gained is that the mortality is very high. Cases reported in the literature indicate a predominating incidence among adult males.

On an etiological basis these cases may be divided roughly into those due to either an extraluminal or an intraluminal cause. The former group is comprised almost entirely of those resulting from non-penetrating abdominal trauma. The more fixed portions of the colon, that is, the cecum, ascending and descending colons are the most liable to injury, although the transverse colon may be compressed forcibly enough against the spine to effect damage either to the bowel wall itself or the mesocolon. The perforation may be an immediate result of the injury due to tearing of the bowel wall or may occur some hours later following necrosis of a bowel segment resulting from crushing, or interference with blood supply. Dean Lewis states that it is not necessarily a severe blow that causes the visceral injury, but force applied in a circumscribed area. There need be no superficial evidences present such as abrasions, contusions, or ecchymoses to indicate the magnitude of the trauma. The intraluminal causes of perforations of the colon consist of a variety of conditions: inflammatory lesions such as diverticulitis, ulcerative colitis or more rarely tuberculous colitis, foreign bodies and those due to the raising of intracolonic pressure.

Koucky and Beck believe that acute perforations complicating chronic diverticulitis occur only in the inflamed diverticulum, as a rupture of an intramural or a peri-diverticular abscess. This however may not hold true if one of the other etiological factors such as raising of intraluminal pressure or foreign body occurs in a patient having colonic diverticula. Buie, Bargen and Rankin state that in a series of 647 cases of chronic ulcerative colitis, perforation of the colon occurred in twenty-two or 3.4 per cent. This complication was seen only in the more severe and extensive cases.

Foreign bodies may be ingested or may be introduced by the anal route. Partial dental plates, nails, needles, pieces of bone, et cetera, have all been reported. Perforation has occurred following the passage of a proctoscope or a filiform catheter. Long periods of time may elapse between the ingestion of a foreign body and the occurrence of a perforation. In one of Koucky and Beck's cases eighteen years had elapsed between the swallowing of a partial dental plate and perforation of the cecum with the plate protruding through it.

Perforations due to increases in intraluminal pressure are reported following the introduction of compressed air through the anus, high colonic flushes, the administration of a barium enema, and very occasionally following a simple enema. Hawkes reports a case in which the patient used a rubber tube attached to a water tap to give himself an enema which resulted in a large perforation of the sigmoid colon.

The signs and symptoms of this condition is that of a spreading peritonitis. Pain is the most prominent symptom of an acute perforation of the colon. It is usually sudden in onset, knife-like in intensity and tends to be distributed over the entire abdomen. In those cases complicating inflammatory lesions the onset may be less abrupt as well as somewhat more localized. Nausea and vomiting are present in the majority of cases. The patient lies rigidly in bed with his knees drawn up and resents the disturbance of physical examination. The abdomen is diffusely tender, although the maximal point may be over the site of perforation, rebound tenderness is present and muscle spasm is marked. The abdomen is flat at first but tends to distend rapidly. Liver dullness is diminished and tends to disappear as distention increases, or if any free gas is present in the peritoneal cavity. The temperature is somewhat elevated but the pulse is disproportionately rapid. The skin is cold and clammy at first but gradually becomes hot and the patient becomes flushed in appearance. There is usually a moderate leucocytosis of the polymorphonuclear type with a tendency to increase as time goes on. A flat plate of the abdomen usually shows considerable distention of the colon but free gas under the diaphragm may or may not be demonstrable. A radio-opaque foreign body may also be visualized.

The diagnosis of acute non-malignant perforation of the colon is extremely difficult because of its rarity and hinges primarily upon an adequate history and a thorough physical examination. In those cases complicating known preexisting disease conditions, and in those cases following trauma or rectal interference the possibility of colonic perforation should be suspected. In the differential diagnosis other lesions causing an acute onset of peritonitis must be considered such as perforated peptic ulcer, perforated appendix, ruptured Meckels diverticulum as well as volvulus, acute pancreatitis, mesenteric thrombosis, strangulated internal hernia, pneumonitis at the lung base and coronary thrombosis. With the exception of the last two of the above conditions all constitute surgical emergencies. In appendicitis with rupture the history usually is that of diffuse pain which gradually localizes and then becomes diffuse again. It usually does not have as fulminating a course as acute colonic perforations do. The history may also help to distinguish between acute perforation of peptic ulcer and of the colon but may also in some instances confuse the issue as it did in one of the cases to be reported. In most instances the true diagnosis is not made before surgical intervention.

Surgical procedures employed for the repair and con-

Inaugural Thesis.

trol of acute colonic perforations will necessarily depend upon the site and size of the leak and the condition of the bowel and mesocolon. Manipulation of the involved bowel and abdominal exploration should be reduced to the minimum to prevent dissemination of infection. Foreign bodies when encountered should always be removed.

Simple closure alone of an acute colonic perforation should rarely be done since no previous bowel preparation has been possible and because an active peritonitis already exists. If the edges of the bowel wall at the site of perforation are otherwise normal in appearance, simple closure and proximal colostomy or cecostomy or exteriorization of the loop containing the perforation, if the mesocolon is long enough at that point, are much more advisable procedures. In the event of an adherent, edematous and inflammatory condition of the involved portion of the bowel, with or without abscess formation, such as is found in perforations complicating chronic diverticulitis, drainage of the abscess or a drain placed at the site of perforation plus transverse colostomy or cecostomy should be carried out. When perforation is associated with necrosis of the bowel wall following tearing of or hemorrhage into the mesocolon, resection, usually of the Mickulicz type is advisable when possible. Gross fecal soiling should be removed by irrigations with saline solution immediately removed with suction. The abdomen should always be drained.

Case 1.—This case is that of a white man, aged sixty-four, admitted to General Hospital on December 2, 1945, complaining of severe pain in the mid-abdomen of ten hours duration. The evening before at about eight-thirty he had slipped on an icy pavement and fallen across the curb, striking his mid-abdomen very forcibly and at the same time striking his face, breaking his glasses and sustaining several lacerations and bruises beneath the left eye. He consulted a private physician who sutured the lacerations. The patient was experiencing no abdominal discomfort at this time and no mention was made of abdominal injury. At three a.m., six and a half hours after the injury, he was suddenly seized with intense pain across the mid-abdomen which continued without abatement until admission. He had continual nausea and one emesis and there had been no defecation or passage of gas since the onset of the pain.

His past history was entirely negative. The salient features of the physical examination were as follows: The patient was well developed, well nourished, lying rigidly in bed. He appeared apprehensive, his face was flushed and his skin was warm and moist. He was acutely tender over the mid-abdomen with marked muscle spasm and some rebound tenderness. These findings gradually diminished as palpation proceeded toward the flanks as well as toward the upper and lower portions of the abdomen. There were no palpable masses and the abdomen was silent. Rectal examination revealed some tenderness. His temperature was 102.6, pulse 100, respiration shallow and rapid, hemoglobin 100 per cent, white blood count 15,600 with 91 per cent pmns. Uninalysis was normal.

X-rays of the abdomen failed to show any evidence of free gas in the peritoneal cavity. The preoperative diagnosis was an acute surgical abdomen. Conditions to be differentiated were: ruptured large or small intestine, acute pancreatitis, injured rectus muscle with possible hemotoma, hemotoma of mesentery or gut wall, perforated peptic ulcer, early pneumonia and ruptured spleen.

At operation, the abdomen being opened through a right paramedian incision, a small amount of seropurulent fluid was encountered and a large, doughy, well-walled off mass was found which consisted of omentum and transverse colon. Detailed examination and exploration of this mass resulted in the exposure of a perforation of the posterior wall of the transverse colon into the gastrocolic omentum and into the transverse mesocolon. The involved portion of the colon, mesocolon and omentum was then widely resected, exteriorized and divided between a Rankin and two Pyar clamps with the formation of a double barreled colostomy. The peritoneal cavity was then irrigated with saline and the abdomen closed around the exteriorized bowel.

The pathologists report of the specimen is as follows: "Sections of the colon show an acute ulcer with necrosis of the entire wall. The wall is infiltrated with an acute inflammatory exudate. Large clumps of bacteria are present. There is no evidence of any malignancy or specific type of inflammation. Daignosis: Acute perforated ulcer of the colon."

With the exception of a rather extensive wound infection his post-operative course was uneventful. His colostomy was closed on his seventhy-fifth post-operative day and he was discharged in good condition and with a healed wound his ninety-first postoperative day. Final diagnosis: Traumatic acute perforation of the transverse colon.

Case 2.—This case is that of a white man, aged sixty-three, admitted to Asbury Hospital at 12:10 a.m., on January 13, 1945, complaining of severe generalized abdominal pain, nausea and vomiting. This pain had sarted suddenly two hours prior to admission and had not abated despite the administration of ½ grain of morphine hypodermically. Eight hours before admission and six hours before the onset of symptoms he had taken an enema because of severe constipation with good results. Following the onset of pain he attempted to give himself another enema but stated he was unable to retain much of the solution.

He had been hospitalized two months prior to the present admission for a transurethral prostatectomy because of vesical neck obstruction, following which he made a very satisfactory recovery. During this hospital admission he had had also a complete gastro-intestinal x-ray examination because of a history of epigastric pain and these revealed an active duodenal ulcer and some spasticity of the colon. He was placed on ulcer management and had been following his dietary program continuously. His past history otherwise was negative.

Physical examination revealed a rather thin white male suffering intense abdominal pain, lying rigidly in bed with knees drawn up. His skin was cold and clammy and his respirations very shallow and rapid. His abdomen was boardlike, moderately distended, tympanitic, without any evidence of localization. Rebound tenderness was marked and liver dullness absent. Rectal examination caused increased pain but was otherwise negative. His temperature was 100, pulse 120, blood pressure 146/90, white blood count 10,700 with 87 per cent pmns., urinalysis was negative except for a few pus cells. A flat plate of the abdomen in the upright position showed free gas beneath the right diaphragm.

A preoperative diagnosis of a ruptured hollow viscus, probably perforated duodenal ulcer was made and immediate operation advised. On opening the abdomen through a right paramedian incision cloudy, yellowish gray fluid was encountered which was aspirated with suction. Exploration of the duodenum and stomach were negative. The transverse colon was completely filled with fecal material and this condition was present down to the mid-sigmoid, distal to which the bowel was empty. Two large fecal balls were found in the pelvis. Further exploration after enlarging the incision resulted in the visualization of a perforation 2 cm. in diameter in the mid-sigmoid. The edges of the perforated bowel were

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RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 936)

perfectly normal in appearance, there being no evidence of diverticulum, neoplasm, inflammation, necrosis or any disturbance of circulation. A loop of sigmoid containing the perforation was then exteriorized through a left McBurney incision, the pelvis irrigated with saline which was withdrawn immediately with suction and the abdomen closed.

His postoperative course was uneveentful. The colostomy spur was divided by clamps and the stoma closed. He was allowed to leave the hospital on his fifty-first postoperative day. He has remained well since.

Conclusions

1. Acute non-malignant perforation of the colon, while rare, occurs frequently enough so that this condition should be given consideration in all obscure cases of peritonitis.
2. The diagnosis is difficult and rests primarily upon an accurate history, physical examination and occasionally on some X-ray finding. It must be differentiated from other causes of spreading peritonitis.
3. Surgical measures instituted for relief of this condition are proximal colostomy with closure of perforation or abscess drainage, exteriorization of the involved bowel segment, or resection with double-barrelled colostomy.
4. Two cases are reported illustrating some of the points brought out in this paper.

I wish to acknowledge the permission granted me by Dr. L. C. Culligan to include his case in this report.

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Discussion

Dr. S. R. Maxeiner: I first wish to compliment Dr. Hoffert on a very excellent presentation. Dr. Hoffert's remarks are always brief and to the point.

I did not expect to discuss this paper but recall offhand three cases similar to those reported by Dr. Hoffert. In one I found a perforation of the sigmoid colon in which there was an old campaign button which had perforated through the wall of a diverticulum. A second patient referred to me by Dr. Paul Rowe many years ago, was found to have a perforation of a diverticulum by a fish bone which went on to abscess formation. The third patient was that of a new-born infant, seen recently through the courtesy of Dr. Charlotte Morrison. X-rays taken soon after birth revealed a tremendously dilated colon with a greatly distended abdomen but no pneumoperitoneum. Examination by rectum revealed a blind bowel without any apparent continuity with the sigmoid colon. X-rays taken twelve hours later showed an extensive pneumoperitoneum, undoubtedly the result of a rupture of this tremendously dilated colon. The baby's condition was critical and no surgery was attempted. The baby expired during the night and postmortem examination disclosed a cordlike atresia about 3 inches long between the rectum and sigmoid through which no gas or feces could pass. The cecum had a large perforation through which gas and feces escaped.

Dr. J. M. Hayes: Dr. Hoffert has given an excellent résumé of the details pertaining to benign perforations of the colon. I saw a perforation from one condition he did not mention.

A doctor is a small town brought in a patient with an acute pain in the lower right abdomen. He thought the patient had an acute appendicitis and opened her at this point. The appendix was normal, but he found a foul-smelling fluid present. He decided the fluid came from a perforation in the area of the sigmoid. He then made an incision over the sigmoid and discovered the perforation in this area. He pulled the sigmoid up enough to get drainage through the wound. I enlarged the wound and brought up what appeared to be a napkin-ring type of carcinoma. We washed out the abdomen with saline solution and put in sulfanilamide, then did a Michulitz type of resection. The tumor mass was sent to Doctor Bell's laboratory and was diagnosed endometriosis.

Dr. O. J. Campbell: I had expected Dr. Hoffert to mention a rather rare entity—the so-called solitary ulcer of the colon. I have seen two cases. One was while serving as an intern for Dr. Dean Lewis. A young healthy girl developed abdominal pain, was operated upon, and a clean, round hole in the cecum was found. The patient had gross fecal contamination and died of peritonitis. As I recall there was no explanation for the development of the ulcer.

My only experience since, was the case of a young man who developed right lower quadrant pain and at operation had developed a walled-off ulcer of the ascending colon just above the cecum. We were able to exteriorize the cecum until the ulcer had healed, following which it was replaced. He has remained well since.

Dr. Kenneth Bulkley: Mr. President: In Doctor Hoffert's paper, he referred to traumatic rupture of the large gut. There is a lesion, seen as far as I know only in children, to which I wish to call your attention. This also follows trauma of the sudden abrupt type rather than the crushing injury. It consists of a complete transverse division of the small gut at the duodeno-jejunal junction. I have seen but two such cases. A definite pre-operative diagnosis was not made in either case. Both recovered following early end to end suture.

Dr. Charles Merkert: In the earlier days the common cause was typhoid.

Dr. Hoffert: I didn't find any mention made in the literature which I reviewed of the benign ulcer of the colon causing perforation. Most any blow in the abdomen is a potential cause for perforation of the colon. A number of cases are reported of children who are struck in the abdomen by bicycle or tricycle handlebars. A kick by a mule or a horse or even a blow with the fist are also mentioned. In the previous years typhoid fever was a common cause for perforation, secondary to ulceration in the colon. The incidence of this disease, however, has decreased to the extent that few cases are seen, and consequently complications have been reduced very markedly.

The meeting adjourned.

Ernest R. Anderson, M.D.
Recorder

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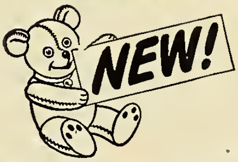

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In Memoriam

FRANK H. ALEXANDER

Dr. Frank H. Alexander, Saint Paul, died August 3, 1946, at the age of seventy-eight.

Dr. Alexander was born in Charlotte, Vermont, March 19, 1868. He was graduated from the Medical School of the University of Minnesota in 1897. He served as surgeon for the Great Northern Railway at Barnesville, Minnesota, until 1911 when he began private practice in Saint Paul. He was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations, and was a Mason.

Dr. Alexander is survived by his daughter, Mrs. R. G. Keyworth, Saint Paul.

ARNOLD L. HAMEL

Dr. A. L. Hamel, for thirty-two years a practicing physician in Minneapolis, died of a heart attack July 31, 1946, at Brainerd, Minnesota, while en route with members of his family to Whitefish Lake.

He was born at Wolverton, Minnesota, April 23, 1888. He obtained a B.A. degree from Holy Cross in 1910 and his M.D. degree from the University of Minnesota in 1915.

Dr. Hamel was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He also belonged to the Knights of Columbus, the Alpha Kappa Kappa medical fraternity, and was a member of Alpha Omega Alpha, honorary medical fraternity.

He is survived by his wife, five sons, Dr. Joseph Hamel of Milwaukee, and Robert, John, James and Arnold, Jr., Minneapolis; and five daughters, Mrs. Edwin H. Ryan of Saint Paul, and Anne, Betty Nell, Virginia and Lucy, Minneapolis.

E. M. KINGSBURY

Dr. E. M. Kingsbury, who has been on the staff of the Moose Lake State Hospital as senior physician since October, 1941, died August 8, 1946, from coronary thrombosis.

Dr. Kingsbury was born at Des Moines, Iowa, September 27, 1883. He graduated in medicine from the University of Iowa in 1906. He practiced at Hillsboro, Iowa, from 1906 to 1908, at Norman Oklahoma, during 1908 and 1909, and was employed as physician in the Panama Canal project from 1909 to 1915. He then practiced in Davenport, Iowa, from 1915 to 1921, when he moved to Clearwater, Minnesota, and engaged in general practice until 1941, at which time he became a member of the staff of the Moose Lake State Hospital.

He was married in 1923 at Clearwater and is survived by his widow.

Dr. Kingsbury was a member and past president of the Stearns-Benton Medical Society, a Mason and a member of the Lodge of Perfection of the Scottish Rite.

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REPORTS and ANNOUNCEMENTS

VAN METER PRIZE AWARD

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300.00 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held in Atlanta, Georgia, April 3, 4, 5, 1947, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English; and a typewritten double spaced copy sent to the corresponding secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia, not later than January 1, 1947.

CHICAGO MEDICAL SOCIETY

The third annual clinical conference of the Chicago Medical Society will be held at the Palmer House, Chicago, on March 4, 5, 6, and 7, 1947. Prominent men in medicine from all sections of the United States will take part in the program.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club, St. Paul, Tuesday evening, September 10, 1946.

The program for the evening included the following papers:

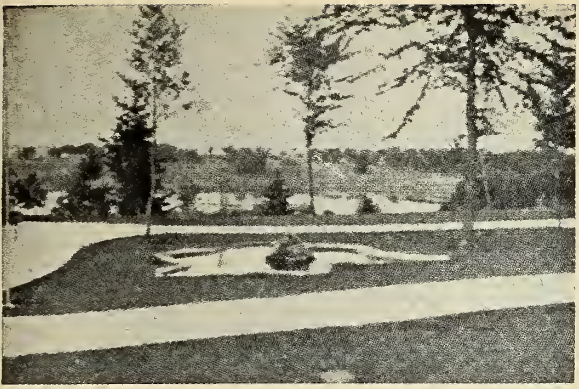
Electro-encephalographic Studies in Idiopathic Epilepsy, Idiopathic Syncope, and Related Disorders—Ralph Rossen, M.D.

The Rorschach Test—Gordon R. Kamman, M.D.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

Attended by more than one hundred doctors from all parts of the state, many of whom were accompanied by their wives, the twenty-sixth annual meeting of the Northern Minnesota Medical Association was held in Crookston on August 24. Dr. George J. Sherwood, of Kimball, president of the Association, presided at the morning session which was devoted to a discussion of medical economics. Speakers at this session included Dr. Berton J. Branton, of Willmar, who spoke on prepaid medical care; Dean H. S. Diehl, of the University of Minnesota Medical School, who talked on present medical education and its relation to the family physician. Dr. Richard B. Hullsiek, of the Veterans Administration, explained medical service available to the veteran. Drs. Carl J. Lund and Norman H. Baker, of Fergus Falls, and Drs. John F. Norman and Manford O. Oppegaard, of Crookston, took part in the concluding discussions.

(Continued on Page 944)



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NORTHERN MINNESOTA MEDICAL ASSOCIATION

(Continued from Page 942)

At noon the Red River Valley Medical Society were luncheon hosts to the visiting doctors at the Hotel Crookston and the Ladies' Auxiliary entertained the out-of-town ladies at a bridge luncheon at the Hotel Wayne.

The scientific session during the afternoon was opened by Dr. Mark B. Coventry, of Rochester, who talked on internal derangements of the knee joint. The other speakers were Dr. Martin Nordland, of Minneapolis, who discussed vagotomy for gastric duodenal ulcers; Dr. Charles Rea, of St. Paul, who presented new concepts in the treatment of thyroid disease, and Dr. Randall G. Sprague, of Rochester, who talked on the use of insulin mixtures. Dr. Edward L. Tuohy, of Duluth, assisted by his associates, directed a clinical x-ray pathological conference.

Dr. Willard L. Burnap, of Fergus Falls, presided at the banquet, which was opened with a brief talk by Dr. Edwin J. Simons, of Swanville, president of the Minnesota State Medical Association. The guest speaker was Dr. Walter H. Judd, of Minneapolis, congressman for the Fifth District. Dr. George J. Sherwood also gave an address.

Officers elected for the ensuing year are Dr. Richard Newton Jones, of St. Cloud, president; Dr. Carl Lund, Fergus Falls, vice president, and Dr. Chester L. Oppegaard, Crookston, secretary and treasurer.

MEDICAL BROADCAST FOR SEPTEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

September			
3	1:15	WCCO	The Hospital as a Diagnostic Center
5	1:15	WCCO	Food Fads and Fallacies
7	11:30	KUOM-KROC-KFAM	Medicine in the News
10	1:15	WCCO	Nursing Service
12	1:15	WCCO	Diet for the Aged
14	11:30	KUOM-KROC-KFAM	Medicine in the News
17	1:15	WCCO	The Hospital as an Emergency Center
19	1:15	WCCO	Food Allergies
21	11:30	KUOM-KROC-KFAM	Medicine in the News
24	1:15	WCCO	Nursing Needs
26	1:15	WCCO	Dental Research
28	11:30	KUOM-KROC-KFAM	Medicine in the News

REFRESHER COURSES

Specialized refresher courses enrolling 180 army physicians who spent the war in administrative positions will be given in twenty-five medical or allied subjects at Mayo Foundation, Rochester, and twenty-six other universities and medical institutions throughout the nation, the war department announced September 16.

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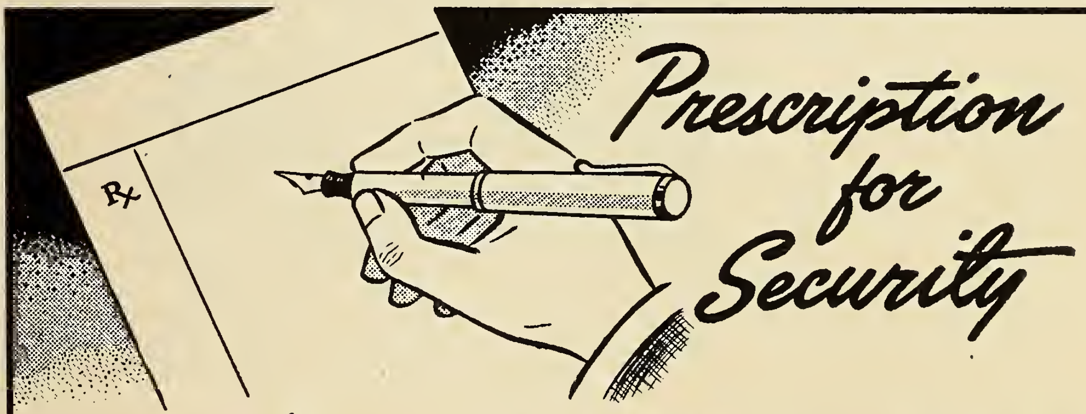

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◆ Of General Interest ◆

Dr. Irving C. Bernstein and Dr. John Maunder have joined the staff of the Oliver Clinic at Graceville. Both physicians were recently released from military service.

* * *

Dr. Robert R. Kierland, Mayo Clinic, has been on an inspection tour of hospitals operated by the Veterans Administration in the area of Rapid City, South Dakota.

* * *

Dr. Milo M. Loucks, formerly of Northome, has entered practice in Kelliher. Mrs. Loucks, who is a registered iurse, is assisting the doctor in his office.

* * *

Drs. Truman A. and Homer H. Hedemark, who have been in practice at Thief River Falls, have moved to Ortonville where they have opened offices and purchased homes.

* * *

Dr. Joseph O. McKeon, who in addition to his medical practice of medicine at Montgomery served as mayor for several years, has moved to Faribault and opened offices there.

* * *

Dr. Roy W. Sorenson, who was recently discharged from military service, has joined the Martinson Clinic at Wayzata. A native of Minnesota, Dr. Sorenson took his medical degree at the Los Angeles Medical College.

* * *

Dr. Glenn E. Nelson, who looked after the patients of Dr. Esser in Gibbon during the latter's recent illness, has entered practice in Fairfax. Dr. Nelson served in the Navy Medical Corps during the war.

* * *

Dr. Wayne W. Canfield, formerly in practice at Houston, has opened offices in Winona. Dr. Canfield was recently discharged from the Army after two years of service.

* * *

After three and a half years at the Mayo Clinic in Rochester, Dr. Allen Benson has gone to Glendale, California, where he will engage in the practice of internal medicine.

* * *

Dr. Malvin I. Hauge of Clarkfield is occupying offices in the basement of the new Clarkfield Memorial Hospital until such time as he can erect a clinic building for private practice.

* * *

Dr. William Cleaves is now associated in practice with Dr. Werner J. Lund at the Staples Clinic. Prior to entering military service, from which he was recently discharged, Dr. Cleaves was in practice at Grand Rapids.

* * *

Among the out-of-town physicians who enrolled for the special course for the study of poliomyelitis at the University of Minnesota in August were Dr. Howard K. Helseth, of Fergus Falls, Dr. Walter H. Valentine, of Tracy, and Dr. Malvin I. Hauge, of Clarkfield.

* * *

Dr. Raymond Hottinger, who has been taking a six months' postgraduate course in medicine and surgery at the University of Minnesota since his discharge from the Army, has returned to his practice in Janesville.

* * *

Dr. E. J. G. Bloemendaal, formerly of Iowa, has taken over Dr. Clarence W. Moberg's practice at Lake Park, effective after August 1. Dr. Bloemendaal recently returned to civilian practice after nine years in the Army.

* * *

Dr. Ellsworth E. Thayer has sold his office building in Truman, closed his practice there, and has opened offices in Fairmont.

Dr. Thayer was recently discharged from military service with the rank of captain.

* * *

Work on Dr. Manford B. Dahle's new clinic building at Glenwood has begun and occupancy is promised for the first of the year. Modernistic in design, the building will be 80 by 60 feet, of cement and white brick construction.

* * *

Dr. Gerald Ahern, of Rochester, with Mrs. Ahern and their children, has been visiting his mother, Mrs. Amanda Ahern, at her home in Austin. Dr. Ahern is completing a fellowship in orthopedic surgery at the Mayo Clinic.

* * *

Dr. William E. Fitzsimons, Brainerd, was awarded the Minnesota Power & Light Company's private enterprise trophy and emblem key in recognition of his outstanding contribution to the promotion of civic enterprise at a special dinner meeting of the Brainerd Junior Chamber of Commerce.

* * *

After thirty-nine months in the Army, Dr. Hubert has reopened his offices in Worthington.

A member of the Army Air Force, Dr. Hubert was stationed at Lincoln, Nebraska, for two and a half years, six months at Scott Field, in East St. Louis, and then at Kiester Field, Mississippi, on the Gulf.

* * *

Dr. Carleton G. Kelsey, formerly of Hinckley, has purchased the Hunte Building in Truman from Dr. Ellsworth A. Thayer, and expects to establish his offices and living quarters there. Later, when a suitable home can be secured, he plans to remodel the building into offices for physicians and dentists.

* * *

(Continued on Page 948)

Authorities Agree

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Articles in leading medical journals emphasize that cervical treatment by electro-cauterization is the *Modern Method,* as an office procedure without anesthesia. A comparative chart shows the results of treatment by cauterization, coagulation and conization. It points out that cauterization results in a more rapid cure: a more positive cure and greater freedom from complications.

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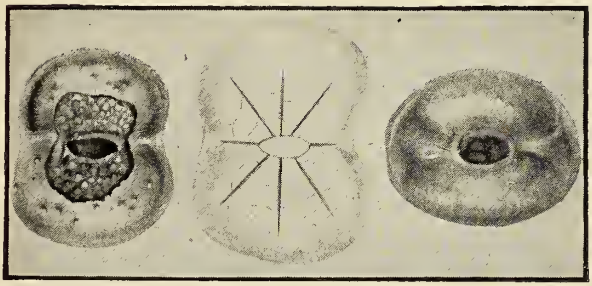

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(Continued from Page 946)

Dr. Philip K. Arzt of Saint Paul has been elected a charter member of the Eastern Association of Electro-encephalographers. This Association was formed last May by a group of electro-encephalographers from the New York Neurological Institute and from the Massachusetts General Hospital. The Association now has about seventy-five members.

* * *

Dr. R. L. Schmidtke, who has been associated with Dr. Frank E. Burch for the past four years, has opened new offices at 441 Lowry Medical Arts Building, Saint Paul. His practice is limited to ophthalmology and ophthalmic surgery.

* * *

Dr. Manford O. Oppegaard, Crookston, has been in San Francisco for the meeting of the American Medical Association. Mrs. Oppegaard, who was visiting in southern California, joined the doctor in San Francisco and before returning home by way of Seattle, they visited points of interest on the West Coast.

* * *

Captain Burtis J. Mears, who was recently discharged from the Army Medical Corps, has opened offices for the practice of internal medicine in the Lowry Medical Arts Building, Saint Paul. Dr. Mears' assignment was at the hospital at the Atomic Bomb Project at Oak Ridge, Tennessee.

* * *

Dr. and Mrs. Percy Watson have returned to Northfield after a stay of four years in Bemidji, where Dr. Watson was engaged in public health work for the State Board of Health. For the first three years in Bemidji, Dr. Watson was associated with work related to the Chippewa Indian Board. Dr. Watson was a medical, missionary in China some years ago.

* * *

Dr. Hendricks, formerly of Minnesota, and more recently of Rock Springs, Wyoming, has purchased Dr. Howard G. Bosland's practice in Verndale. A graduate of the University of Minnesota School of Medicine, Dr. Hendricks was at one time an instructor at the university and has taught medicine for about twenty years.

Verndale has had no resident physician since Dr. Bosland became associated with the clinic at Willmar.

* * *

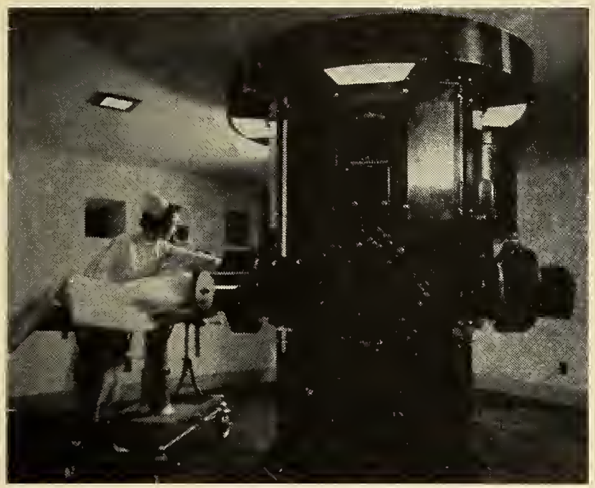
Announcement has been made of the appointment of Dr. Saul Friedfeld, formerly of Iowa City, Iowa, as radiologist at Wesley Hospital in Wadena.

Dr. Friedfeld has been radiologist at the University of Texas in Galveston and Montifiore Hospital in New York City. In addition to his duties at Wesley Hospital, he will also do the radiology work for Perham, Detroit Lakes and Breckenridge.

* * *

Dr. Edward J. Juers has been discharged from military service with the rank of commander in the U. S. Naval Reserve and has resumed his practice at the Inter-State Clinic in Red Wing.

Dr. Juers' assignments during his almost three years of Naval duty included eighteen months on Guam, where he was head of the orthopedic department. He also filled



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the same position in two other hospitals, the last the U. S. Naval Hospital in Seattle, Washington. For his work on Guam, Dr. Juers was awarded the Commendation Ribbon.

* * *

A 1923 graduate of the University of Minnesota School of Medicine, Dr. Rosenfield was in practice at Pequot Lakes until 1938, when he went to Hibbing. He is a veteran of both World Wars and with the rank of major served for many months in the China-India-Burma Theatre. His son, Stanley, is now with the American forces in Tokyo, and his daughter Judith is studying nursing in New York City.

* * *

Dr. Abraham B. Rosenfield has resigned his office of school physician with the Hibbing public school system, effective August 5, and has joined the personnel of the State Department of Health in Minneapolis. Dr. Rosenfield will remain with the department until October, when he will begin a nine months' course of study for a master's degree in public health at the University of Minnesota School of Public Health.

* * *

Dr. Leonard A. Lang, Minneapolis, has been made a member of the Board of Trustees of St. Thomas College, Saint Paul.

Dr. Lang was valedictorian of the Class of 1925, St. Thomas, from where he went to the University of Minnesota Medical School. Following his graduation from the university he was assistant professor in obstetrics there for six years, then entered private practice in Minneapolis, where he is a member of the Board of Directors of the Minneapolis General Hospital.

* * *

Dr. Charles L. Sherman, Luverne, was elected president of the Sanatorium Commission at the annual meeting of the Southwestern Minnesota Sanatorium in July. Dr. Sherman was the first president chosen when the board was organized in 1915 and his recent election is the 32nd consecutive time he has been returned to office. He is the only member of the original board still serving.

* * *

Dr. John W. Gridley, formerly of Rochester, is now associated in practice with Dr. Hillard H. Holm in Glencoe. A graduate of the University of Minnesota Medical School, Dr. Gridley served his internship at the Miller Hospital in Saint Paul and also a year's residency in surgery there. He is a veteran of the last war, where he served for two years in the Medical Corps with the rank of captain.

* * *

Dr. John Paulson, Mayo Clinic, has been presented with a commendation by Secretary of Navy James Forrestal in recognition of "extremely meritorious service in support of military operations as First-Aid Ship during the campaign to recapture the Philippines from October 24 to December 30, 1944..........."

With the rank of lieutenant, Dr. Paulson was a mem-

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ber of the U. S. LST-464, caring for casualties prior to removal to hospital ships. He left the Clinic in October, 1944, and returned to his work in the Section of Anesthesiology on July 8, 1946.

* * *

Dr. Donald T. Anderson, who completed his internship at Miller Hospital in June, entered active service in the Army Medical Corps with assignment on the medical staff of the Veterans Hospital at St. Cloud.

Dr. Anderson is a native Minnesotan, having been born at Red Wing. He is a graduate of Hamline University and the University of Wisconsin Medical School, where he received his doctor's degree in 1945.

* * *

With the sale of his interest in the Home Hospital Corporation at Slayton to Drs. Henry C. Doms and Roy F. Pierson, in July, Dr. Leon A. Williams took a first step towards taking things a bit easier. Dr. Williams has been practicing for fifty years, forty-two of them at Slayton. He will continue to occupy his offices and keep regular hours and will serve on the courtesy staff at the hospital.

* * *

Announcement has been made of the resignation of Dr. David O. N. Lindberg as Superintendent and Medical Director of Buena Vista Sanatorium at Wabasha. Dr. Lindberg has accepted a similar position at the Utah State Sanatorium at Ogden and has moved there with his family. In addition to his work at the sanatorium, Dr. Lindberg will also teach at the University of Utah School of Medicine.

* * *

Dr. Mario M. Fischer, director of public health in Duluth, has been made a member of the National Tuberculosis Association's Board of Directors. Minnesota is now represented on the board by three members. The other two are Dr. Sidney A. Slater, Worthington, superintendent of the Southwestern Minnesota Sanatorium, and Dr. H. Corwin Hinshaw, of Rochester, who is also vice president of the association.

* * *

Dr. William C. Bernstein has reopened his offices in the Lowry Medical Arts Building in Saint Paul for the practice of protology. Dr. Bernstein, a major in the Army Medical Corps, was recently released from assignment on the Atomic Bomb Project at Oak Ridge, Tennessee, where he was proctologist for the personnel.

Dr. Bernstein has also resumed his clinical work at the University of Minnesota Hospitals.

* * *

Dr. Paul M. Smith, formerly of Rochester, is now associated in practice with Dr. Frederick W. Franchere at Lake Crystal.

Dr. Smith was discharged from military service in May after thirty-six months in the Army Medical Corps, with assignment in the European Theatre for twenty-seven of them. He is a graduate of the University of Minnesota Medical School and he interned at the General Hospital at Wilkes-Barre, Pennsylvania.

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Dr. Gordon S. Paulson, son of Dr. Theodore S. Paulson, of Fergus Falls, has opened offices for the practice of medicine in Evansville.

Dr. Paulson was recently discharged from the Army with the rank of major after two and a half years of service, most of the time in Italy. He is a graduate of St. Olaf College and the University of Minnesota School of Medicine. Prior to entering the Army, he had been on hospital duty in the Canal Zone for a year.

* * *

Dr. Thomas G. Wellman has resumed his practice at Lake City after an absence of forty months in the Army where he was a flight surgeon for the 369th Fighter Group. During the greater part of his service Dr. Wellman was assigned to military centers in the South.

A graduate of the University of Minnesota Medical School, Dr. Wellman interned at Jersey City, N. J., and was in practice in northern Minnesota for about three years prior to opening his offices at Lake City.

* * *

Dr. Charles W. Mayo, Rochester, and Dr. Harold S. Diehl, dean of the University of Minnesota Medical School, took part in the discussion of the medical plan for veterans at the American Legion convention in St. Cloud, August 10 to 14. Dr. Diehl is chairman of the dean's committee which is responsible for the selection of medical personnel for the Fort Snelling Veterans Hospital.

Announcement has been made of the dissolution of the partnership of Dr. Herman J. Just and Dr. Rudolph C. Radabaugh at Hastings on July 31, 1946.

Dr. Just will maintain offices at the Latto Hospital, where he has been a member of the staff since coming to Hastings in 1943, until other arrangements can be made. He is also part-time physician at the Hastings Hospital under the Minnesota Civil Service Commission.

* * *

Major Joseph M. Ryan, Saint Paul, was transferred from his assignment on the Atomic Bomb Project at Oak Ridge, Tennessee, where he was chief of the Medical Service, to the Percy Jones Hospital at Battle Creek, Michigan, in April, and is now serving as assistant chief of the Medical Service. Before leaving Oak Ridge, Dr. Ryan was presented with the Army Commendation Ribbon. He has been in service for three years and expects his discharge in October.

* * *

Dr. David Craig, who since his discharge from military service last November has been engaged on a teaching fellowship at the University and Ancker Hospitals, has completed his work and has entered the practice of internal medicine in association with Dr. Joseph F. Borg in the Lowry Medical Arts Building, Saint Paul. A captain in the Army Medical Corp, Dr. Craig was with the Twenty-sixth General Hospital in England, Africa and Italy.

Dr. Elmer T. Ceder has opened offices for the practice of dermatology and syphilology at 652 Medical Arts Building. A 1930 graduate of the University of Minnesota Medical School, Dr. Ceder served his internship at the Mayo Clinic. He was with the U. S. Public Health Service at Baltimore, Maryland, from 1932 to 1935. He returned to the Mayo Clinic in 1935 and remained there until 1941. After a year's absence, he again returned to the Clinic where he stayed until leaving on June 1, 1946, to enter private practice.

* * *

Announcement has been received of the marriage of Dr. Susanne Geist, Saint Paul, to Dr. Swift C. Black, Springfield, South Carolina, at the home of the bride's parents, Mr. and Mrs. John Geist, in Saint Paul, on August 19. The wedding was the culmination of a romance that began when both the young doctors were serving their internship at the Jackson Memorial Hospital in Miami, Florida, in 1943.

Dr. Geist is a graduate of the University of Minnesota Medical School, and Dr. Black graduated from the Medical College, University of South Carolina.

* * *

Dr. George Haugen, accompanied by his bride of July 3, has been visiting his mother, Mrs. T. G. Haugen, at her home at Fergus Falls.

Dr. Haugen, a lieutenant, junior grade, was discharged from the Navy on July 17 after three years in service. He enlisted while still attending the University of Minnesota and served overseas on the destroyer, *USS Bennett* in the Pacific. He also served aboard ship at Bremerton, Washington, and San Diego, California.

Mrs. Haugen was formerly Mary Lucile Cox, daughter of Mr. and Mrs. W. H. Cox, of Hamilton, Ohio.

* * *

Dr. John R. Nickerson, of Akron, Ohio, has entered practice at Heron Lake and will operate the local hospital.

Dr. Nickerson was discharged from the Navy several months ago, having been in service since May, 1943. Prior to his induction into the armed forces, he had practiced in several large eastern hospitals and at the same time was engaged in postgraduate study. He has been associated with some of the foremost doctors in the country and has held several responsible posts; among them, physician and surgeon in charge of a seventy-bed hospital.

* * *

Dr. Carl A. Peterson, Chisago City, and Dr. H. H. Albrecht, formerly of Floodwood and St. Croix Falls, Wisconsin, but recently residing in Lindstrom, are associated in practice at the Chisago City Clinic which opened on July 15.

Dr. Peterson graduated from the University of Minnesota School of Medicine in 1942 and interned at Ancker Hospital in Saint Paul. Dr. Albrecht is a graduate of St. Olaf College and Marquette University, Class of 1942. Following the completion of his internship at St. Mary's Hospital in Duluth, he entered practice at Floodwood.

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Dr. Samuel H. Boyer, Sr., Duluth, who was eighty on July 22, began his birthday celebration the day before when the staff of St. Luke's Hospital surprised him with a party in the reception rooms at the hospital. Among those extending felicitations was Dr. William R. Bagley, who entered the pioneer medical field seven and half years after Dr. Boyer came to Duluth in 1891, shortly after his graduation from the University of Pennsylvania Medical School.

In commenting on his birthday, Dr. Boyer said that when one reaches eighty he gets "a little tired after activity and sometimes dozes when he ought to be awake, but the joys of living still persist."

* * *

Dr. George W. Drexler, who has been in military service since August, 1942, is now associated in practice with Dr. Thomas E. Havel at Blue Earth.

A native of Douglas County, where he grew up at Brandon, Dr. Drexler graduated from St. John's University at Collegeville and took his medical degree at the University of Minnesota. He interned at the Minneapolis General Hospital in 1940 and 1941. At the time of his entry into service he was associated with the Long Prairie Clinic at Long Prairie. Of Dr. Drexler's forty-one months of service, eighteen of them were spent at Fort Snelling and twenty-three in a station hospital in the Southwest Pacific.

* * *

Drs. Henry C. Doms and Roy F. Pierson, of Slayton, have been joined in partnership by Dr. Richard M. Johnson, of Manning, Iowa.

Dr. Johnson is a native of Berkeley, California, where he attended St. Mary's College, graduating from San Jose. He took his medical degree at the University of Nebraska School of Medicine in 1942, and served his internship and residency in San Jose, where he also entered practice and remained until his induction into the Navy in August, 1944.

His assignments during his two years in service were on two hospital ships—one an LST and the other, one of the Navy's largest hospital ships—both in the South Pacific area.

* * *

Dr. Marjorie A. Hartig, daughter of Dr. Hermina Hartig, Minneapolis, and Dr. John Beer, son of Mrs. A. J. Beer, of Saint Paul, were married in St. Mary's Church in Saint Paul on Saturday, August 10.

The bride, in marrying a physician, followed the example set by her mother, who married Dr. Hugo Hartig, a classmate at the university, in June, 1914, the day after both had graduated. Dr. Marjorie and Dr. Beer graduated together from the University of Minnesota in 1939, but he has since been away in military service.

Dr. Hermina Hartig, chief physician of the Minneapolis Board of Education, was one of two women in a class of thirty-two; her daughter was one of eight women graduating in a class of 120.

* * *

Dr. Rochfort W. Kearney, of Mankato was released from active duty in the Army Medical Corps on July 2. Dr. Kearney, a lieutenant colonel, entered service on March 27, 1943, and his first assignment was at

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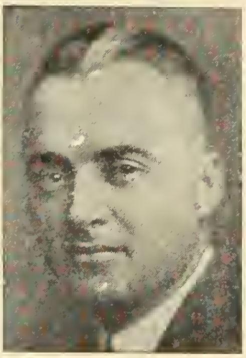

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Walter Reed Hospital. Later he was attached to the 182nd General Hospital as chief of General Surgery and assistant chief of the Surgical Service in England. Immediately preceding his discharge he was chief of Surgical Service at the Mayo General Hospital, Galesburg, Illinois, where he was engaged in neurological, general, orthopedic and gynecological surgery.

Dr. Kearney is a graduate of Northwestern University Medical School. He interned at Ancker Hospital in Saint Paul and later had a surgery fellowship at the Mayo Clinic.

* * *

Dr. Clifford Dale Snyder, who has been assisting Dr. Arno W. Sommer with his practice in Elmore since his de-activation from military service on January 24, 1946, has entered practice at Kiester, which has been without a doctor since the second year of the war.

Dr. Snyder graduated from the University of Minnesota School of Medicine in 1943 and served his internship at Fresno, California. He was inducted into the Army in January, 1944, and, in addition to service in various hospitals in this country, he was on assignment in France, Belgium and other European locations for fifteen months. When retired, he was a captain in the Army Medical Corps.

Dr. and Mrs. Snyder are both natives of Faribault County and well acquainted in the community.

* * *

"One of the nicest birthdays I ever had," was Dr. Thomas Hall Shastid's comment on the celebration of his eightieth birthday in Duluth on July 19. Letters and telegrams arrived from all over the country, and his offices were a bower of flowers from friends and well-wishers who remembered the day.

Dr. Shastid began his medical studies when his father made him his apprentice on his tenth birthday. He graduated from Columbia University Medical College when he was only twenty-one, having been admitted on his apprenticeship certificate from his father. His extensive work in ophthalmology has won him both national and international honors. A prolific writer, he reserves his forenoons and all day Saturday and Sunday for writing and confines his office hours to afternoons of week days. Although he writes between 500 and 1,000 words daily, he says he cannot find time to write all that he would like. His published work includes thirty-five volumes, three of them novels.

* * *

The appointment of Dr. Albert V. Stoesser, associate professor of pediatrics at the University of Minnesota Medical School, as representative to the Scientific Exhibit for the Section on Pediatrics for the 1947 Session of the American Medical Association, has been announced by Dr. Thomas G. Hull, director of the exhibits. Dr. Stoesser will be responsible for setting up a good series of exhibits on pediatric subjects at the next meeting of the AMA. In the past pediatrics have been more or less submerged by other exhibits in the Section on Internal Medicine.

Dr. Stoesser was also made chairman of the Committee on Press Releases for the American College of Allergists at their meeting in San Francisco. At the

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same time he was appointed to the editorial board of *Annals of Allergy*. According to Dr. Stoesser, the committee, which was organized in response to numerous requests from allergists all over the country, will answer many of the articles on allergy which are being published in newspapers and popular magazines, and which amount to little more than "trash," in order that the public may be informed of the truth.

* * *

Dr. William H. Feldman, professor of comparative pathology at the Mayo Foundation, flew to London on July 2 to give the Harben Lecture, which is sponsored annually by the Royal Institute of Public Health and Hygiene.

While abroad Dr. Feldman will also lecture in other parts of England, France, Denmark, Sweden and Portugal. His subjects will be "Chemotherapy of Tuberculosis," "Basic Consideration of Chemotherapy and Tuberculosis," "An Evaluation of the Efficacy in Tuberculosis of Sulfonamides, Sulfones and Certain Other Substances," "The Effect on Tuberculosis of Antagonistic Substances of Microbial Origin with Particular Reference to Streptomycin."

Dr. Feldman will also speak on "Antibiotics in Tuberculosis with Special Reference to Streptomycin" at the Pasteur Institute in Paris, at a meeting of the British Tuberculosis Association at Oxford, England, at a meeting of the Antituberculosis Association in Stockholm, Sweden, at the University of Copenhagen, Denmark, and in Lisbon, Portugal, where he will participate in an International Course on Medicine and Surgery of Emergency.

Dr. Harold A. Christiansen and Dr. Bernard N. Karleen, of Minneapolis, have opened offices in partnership at Jackson.

Dr. Christiansen graduated from the University of Minnesota School of Medicine in 1938 and interned at the Minneapolis General Hospital. From there he went to the North Dakota State Hospital at Jamestown, where he was a member of the staff for a year and a half. He was on duty in the European Theatre for five years and also served at an evacuation hospital in this country. Since his discharge from service he has been taking postgraduate work in internal medicine and diseases of the eye at the university.

Dr. Karleen is also a graduate of the University of Minnesota Medical School. He interned at the Receiving Hospital in Detroit, Michigan, and had a year's residency at Blaine Hospital in Detroit. He, too, was a member of the staff of the North Dakota State Hospital for a year and a half. Prior to entering military service he was practicing in Balaton, Minnesota, for over a year. A member of the Army Air Force, Dr. Karleen was assigned to the China-India-Burma Theatre for three years. Since his discharge he had been doing postgraduate work at the university.

* * *

Dr. Allen J. Blake, Hopkins, recently established something of a record in getting back into private practice from military service. Discharged on a Thursday afternoon, he began to work with his brother, Dr. James A. Blake, on Friday morning.

Dr. Blake, who is a member of a family of four physicians, father and three sons, entered the Army Medical Corps in January, 1944, following his graduation from Marquette University, Milwaukee, Wisconsin. He served for sixteen months in the China-India-Burma Theatre where he was commanding officer of a 75-bed hospital supporting railroad troops. In addition, Doctor Blake and his staff were responsible for most of the medical care of the patients in a 75-bed civilian hospital operated by the American Baptist Mission, which had lost its personnel to the emergency demands of war. As a result, the army doctors delivered babies and took care of various sorts of ailments.

Returned to the States last January, except for a forty-five-day terminal leave, Dr. Blake was on duty at Fitzsimons Hospital in Denver until sent to Camp Atterbury prior to separation from service.

Captain Paul Blake, another brother, who was in combat duty overseas, is still in service. Dr. James A. Blake was discharged from the Army some months ago and has since been practicing with his father, Dr. James Blake, in Hopkins.

* * *

The Hennepin County Medical Society has announced the return to practice of the following members:

Dr. U. Schuyler Anderson—1951 Medical Arts Building. Dr. Anderson enlisted in August, 1942, and spent ten months of his service in England.

Dr. Bernard A. Cohen—3 West Twenty-sixth Street. Dr. Cohen entered the Navy in June, 1944, and was on duty for a year in the South Pacific.

Dr. Maurice C. Gilbert—offices at 330 Broadway. A captain in the Army, Dr. Gilbert was inducted in March, 1944, and served as chief of medical service at Fort Storey, Virginia.

Dr. I. M. Goldberg—325 Medical Arts Building. Dr. Goldberg entered service in September, 1943, and served ten months with a construction battalion in the Hawaiian Islands and six months in the Philippines. He was a commander in the Navy.

Dr. Wayne S. Hagen has resumed his practice of internal medicine with offices at 800 Physicians and Surgeons Building. A lieutenant colonel in the Army Air Force, Dr. Hagen entered service in December, 1940, and served as chief of medicine and commanding officer at the Ft. McDowell, California, hospital.

Dr. Albert T. Hayes—1149 Medical Arts Building. Inducted into service in July, 1943, Dr. Hayes was assigned to Oak Ridge.

Dr. Herbert W. Jones—5 West Lake Street. Dr. Jones entered the Army in January, 1941, and was two years in North Africa and Italy.

Dr. Vernon L. Lindberg—eye specialist—has resumed his practice at 707 Physicians and Surgeons Building. Entering service in August, 1942, Dr. Lindberg was stationed in Oklahoma City and San Antonio and later was on assignment at Oak Ridge, Tennessee.

Dr. Harold E. Miller—1531 Medical Arts Building. Dr. Miller was inducted into the Army in September, 1942, and served at Fitzsimons General Hospital, Denver, Colorado.

Dr. Lawren B. Nesset—2929 Bloomington Avenue. A first lieutenant in the Army, Dr. Nesset entered service in April, 1944, and was with an artillery unit in the European Theatre for six months.

Dr. Edward G. Olsen—511 Medical Arts Building—urologist. Dr. Olsen entered service in July, 1943, and was on assignment at Oak Ridge.

Dr. Benjamin J. Phalen—surgeon—La Salle Building. Dr. Phalen enlisted in the Army Air Corps in September, 1942, and served in Texas.

Dr. Herbert Peterson—607 La Salle Building. Dr. Peterson entered service in the Navy in October, 1943.

Dr. Frederic W. Wipperman, eye specialist, has reopened his offices at 1921 Medical Arts Building. Dr. Wipperman entered the Army in March, 1942, and was on assignment in the Aleutians and at Wold-Chamberlain Field.

* * *

Katharine J. Densford, director of the University of Minnesota School of Nursing, left for England on August 9, to attend two nursing conferences. The first was the board meeting of the International Council of Nurses held in London on September 3 and 4, with representatives from forty countries. The other was the meeting of the grand council of the Florence Nightingale International Foundation, also in London on September 11 to 13. The Foundation, which is sponsored by the International Council of Nurses, is an endowed trust to provide postgraduate education in nursing.

Miss Densford is president of the American Nurses' Association.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

The Treatment of Bronchial Asthma. Vincent J. Derbes, M.D. Instructor in Medicine and in Preventive Medicine, Tulane University of Louisiana School of Medicine; Assistant Visiting Physician, Charity Hospital of Louisiana; Director of Department of Allergy, Ochsner Clinic; Fellow, American College of Allergists; member American Academy of Allergy. And Hugo Tristram Engelhardt, M.D., F.A.C.P., Instructor in Clinical Medicine, Baylor University College of Medicine, Houston, Texas; Physician, Humble Oil and Refining Co., Houston; Adjunct in Medicine, Jefferson Davis Hospital, Houston; Formerly Instructor in Medicine, Tulane University of Louisiana School of Medicine and Visiting Physican, Charity Hospital of New Orleans; Fellow, American College of Allergists. 466 pages. Illus. Price, $8.00, cloth. Philadelphia: J. B. Lippincott Co., 1946.

Penicillin—Its Practical Application. Sir Alexander Fleming, F.R.C.P., F.R.C.S., F.R.S. Nobel Prize Award, discoverer of penicillin; Professor of Bacteriology, University of London; St. Mary's Hospital; and twenty-eight contributors in special fields of medicine. 380 pages. Illus. Price, $7.00, cloth. Philadelphia: Blakiston Co., 1946.

Psychotherapy in General Medicine. Report of an Experimental Postgraduate Course. Geddes Smith, Associate the Commonwealth Fund. 38 pages. Price 25c, paper cover. New York: Commonwealth Fund, 1946.

ANESTHESIA IN GENERAL PRACTICE. Stuart C. Cullen, M.D., Associate Professor of Surgery (Anesthesiology) State University of Iowa College of Medicine. 260 pp., illus., $3.50. Chicago, Illinois: The Year Book Publishers, Inc. 1946.

This volume is intended, as the author states, "not as a complete text but rather as a manual useful to the medical student, the part-time anesthestist and others who may be called upon to employ depressant drugs, alleviate respiratory depression or obstruction and treat hypoxia or shock." The types of anesthesia more frequently employed in general practice, namely—inhalation and spinal, are discussed practically, and the signs of anesthesia are systematically reviewed; appropriate emphasis is placed upon avoiding complications in using any depressant drug.

The section dealing with curare is well done and is recommended to those doing general surgery; the subject of oxygen therapy is worth reading by anyone in the practice of medicine. It is gratifying to have suitably trained people concerned with the problem of shock. The author not only clearly and concisely discusses the "Recognition and Treatment of Shock" but also challenges the anesthetist thusly: "the surgeon's attention should not be distracted from the surgical procedure and it is more convenient for the anesthetist than for the surgeon to assume responsibility for the diagnosis and treatment of shock."

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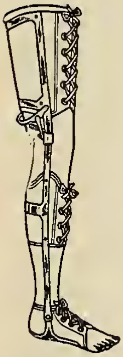

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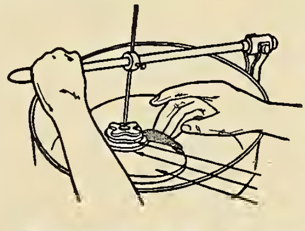

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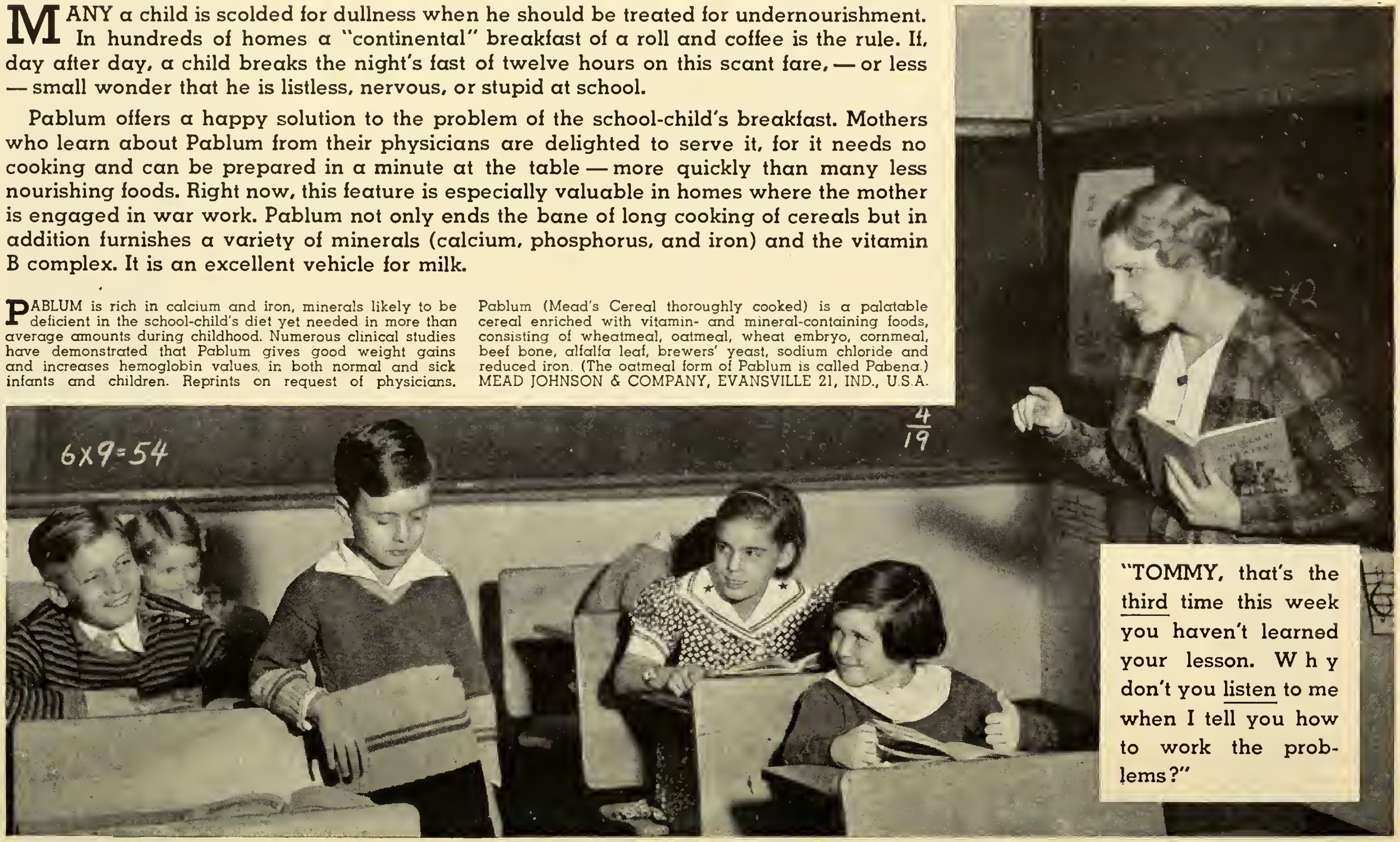

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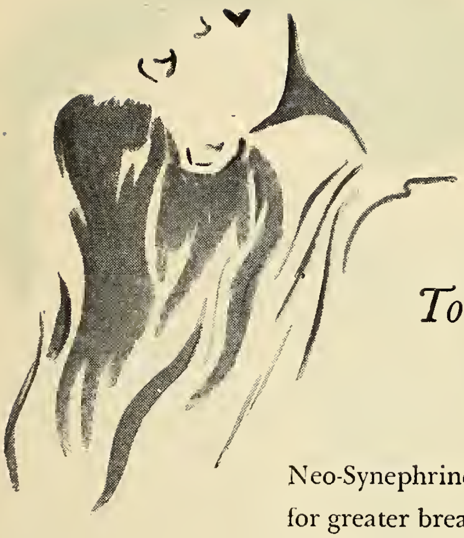

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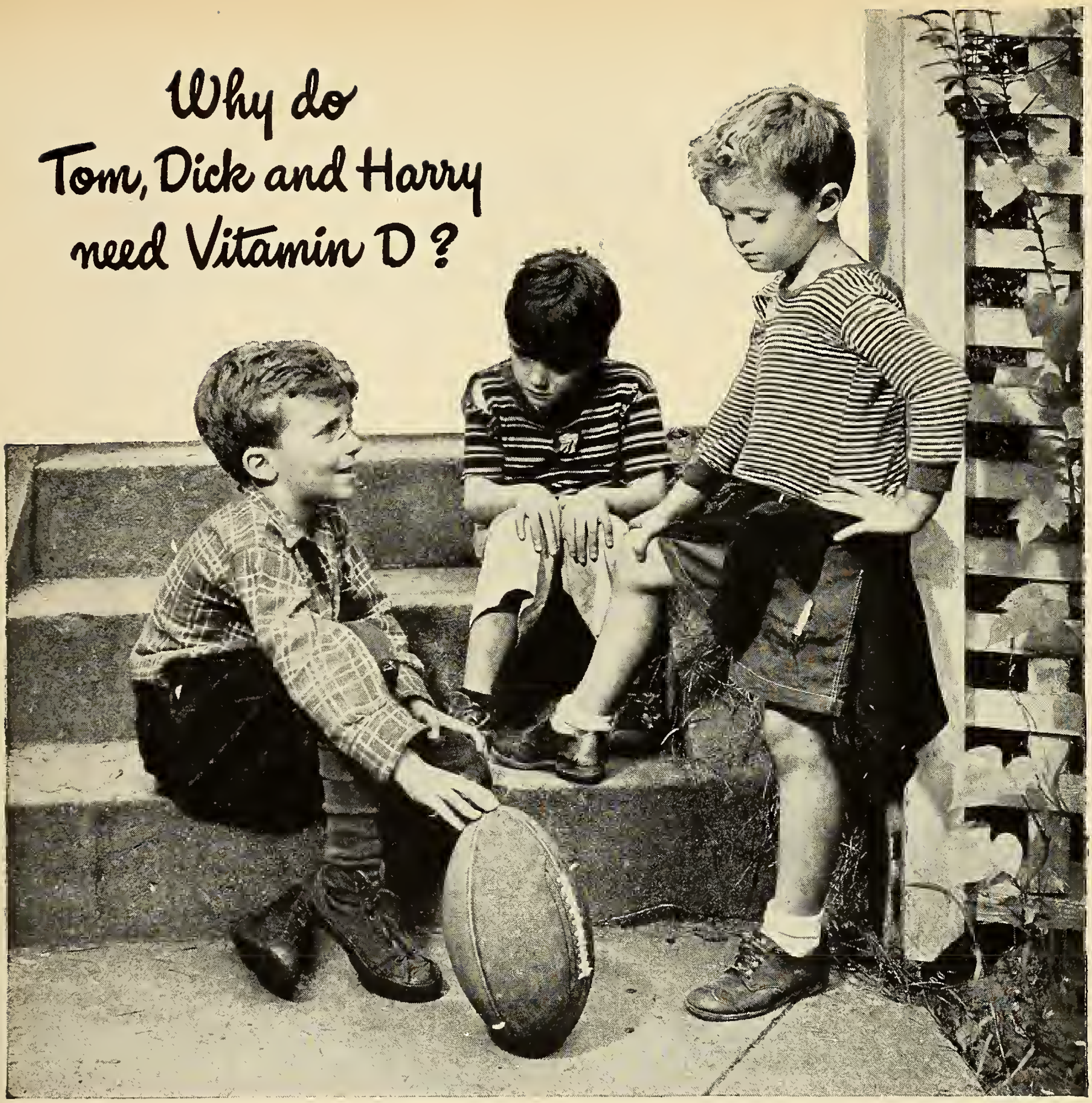

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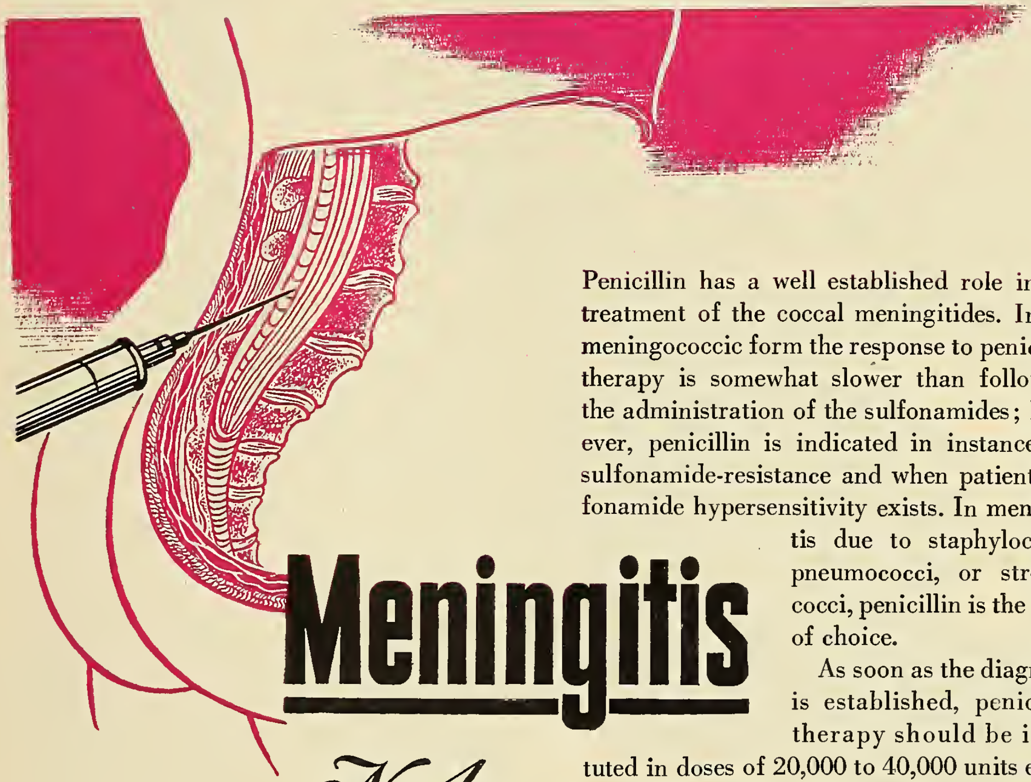

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SPINK, W. W., *and* **HALL, W. H.:** *Penicillin Therapy at the University of Minnesota Hospitals: 1942-1944, Ann. Int. Med. 22:510 (April) 1945.*

WHITE, W. L.; MURPHY, F. D.; LOCKWOOD, J. S., *and* **FLIPPIN, H. F.:** *Penicillin in the Treatment of Pneumococcal, Meningococcal, Streptococcal, and Staphylococcal Meningitis, Am. J. Med. Sc. 210:1 (July) 1945.*

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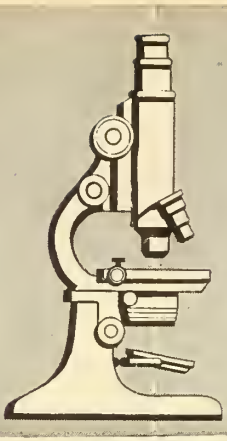
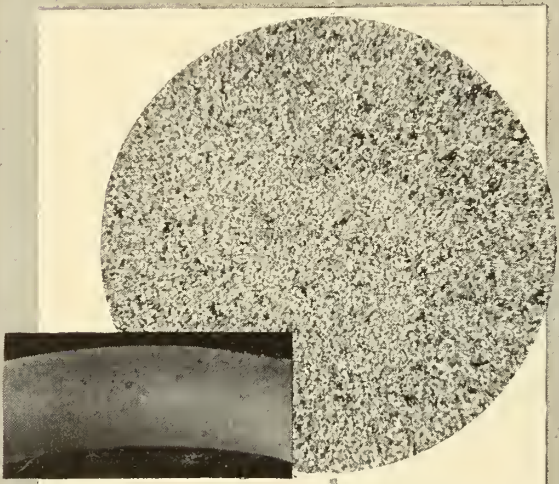
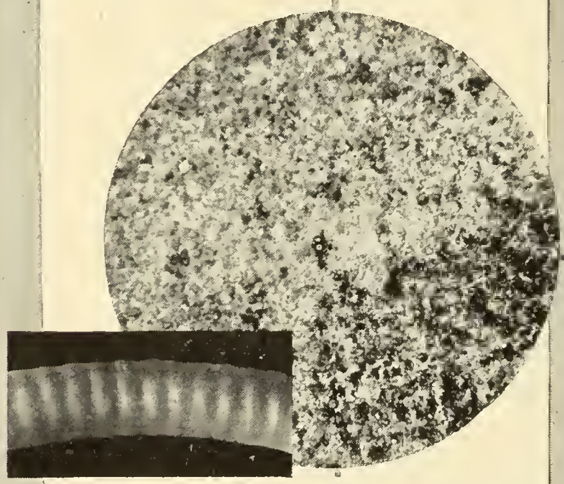


Through the MICROSCOPE



No. 1 Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a "RAMSES" Flexible Cushioned Diaphragm.



No. 2 Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a conventional-type diaphragm.

quality first since 1883

The discerning eye of the microscope reveals notable advantages of the "RAMSES"* Flexible Cushioned Diaphragm.

Only the "RAMSES" has the patented rim construction which provides both a wide, unindented area of contact with the vaginal walls, and a cushion of soft rubber to buffer spring pressure.

The pure gum rubber used in the dome is prepared by an exclusive process which imparts lightness, strength, velvet smoothness, and long life.

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Manufactured in gradations of 5 millimeters in sizes ranging from 50 to 95 millimeters, inclusive. Available through all recognized pharmacies.

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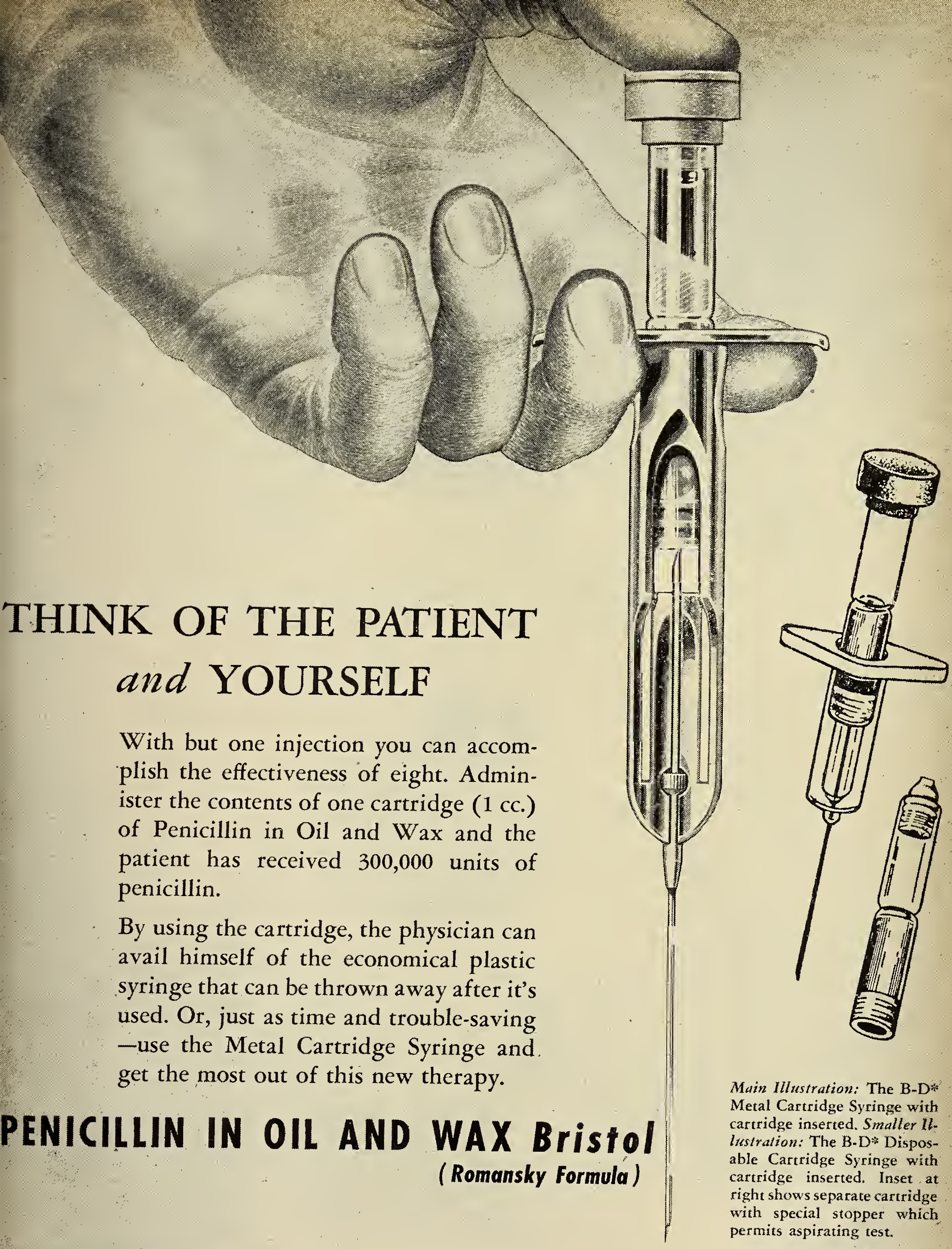
*The word "RAMSES" is a registered trademark of Julius Schmid, Inc.



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By using the cartridge, the physician can avail himself of the economical plastic syringe that can be thrown away after it's used. Or, just as time and trouble-saving —use the Metal Cartridge Syringe and get the most out of this new therapy.

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Main Illustration: The B-D* Metal Cartridge Syringe with cartridge inserted. *Smaller Illustration:* The B-D* Disposable Cartridge Syringe with cartridge inserted. Inset at right shows separate cartridge with special stopper which permits aspirating test.

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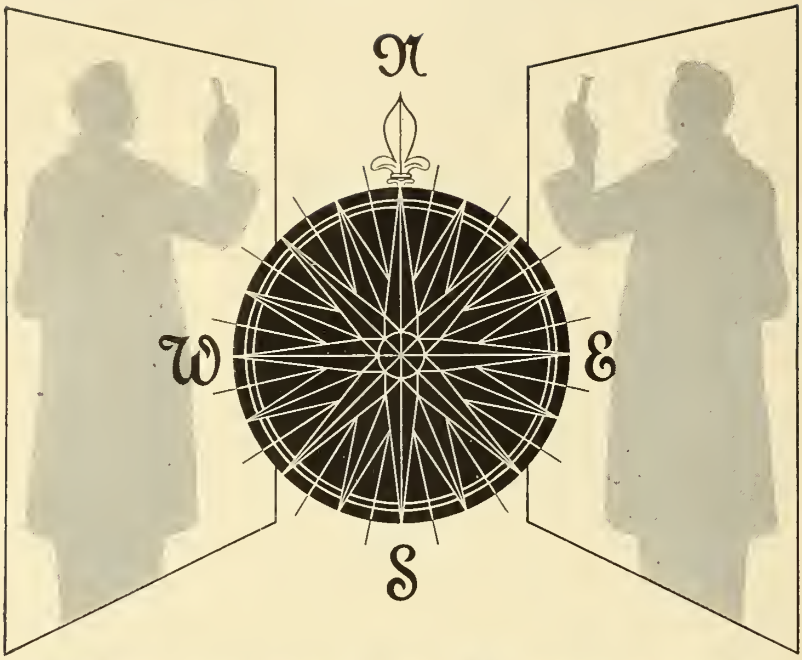

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What a pharmaceutical manufacturer produces and makes available to the practicing physician is fully as important as the methods and safeguards employed.

While in many laboratories the search for that rarest of drugs—the "ideal specific"—continues, the procession of today's problems still scuffs the waiting-room carpet. Johnny's sore toe—old Mrs. Brown's asthma—Mr. Clark's ulcer—Lucy, the frail war bride, not too good a risk in an impending delivery.

To thumb through the files of the average sincere prescription pharmacist is to discover how often the old and time-tried drugs are used. And how much of adjustment and adaptation are needed to fit commercially available formulae in potency and in content to meet current requirements.

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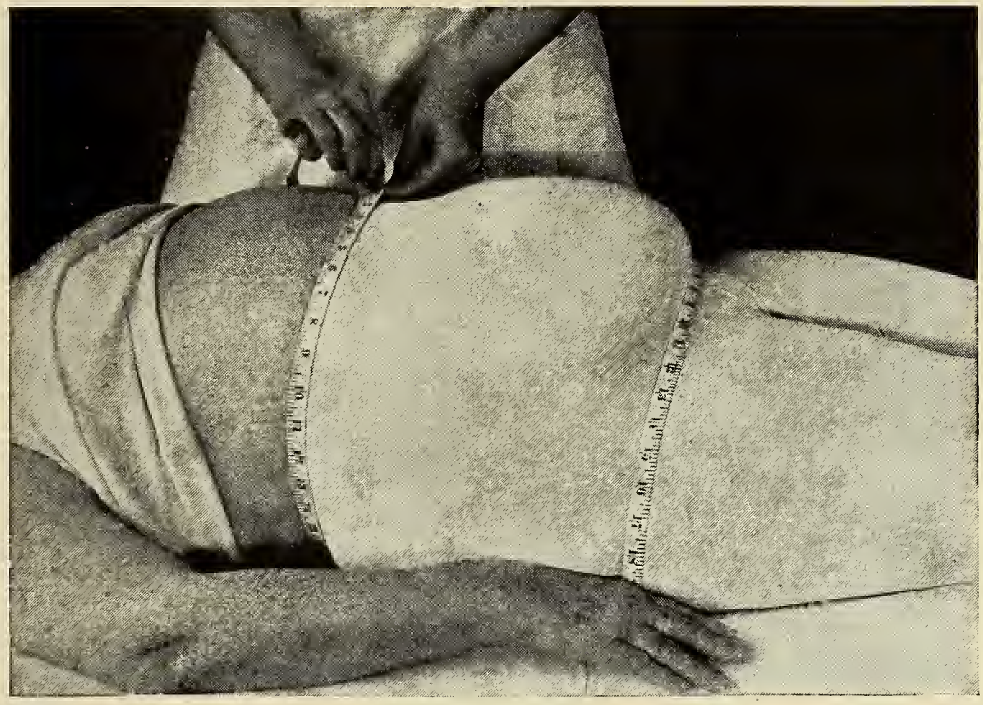

OBESE PATIENT: When standing erect, her anterior abdominal wall sagged down upon her thighs.

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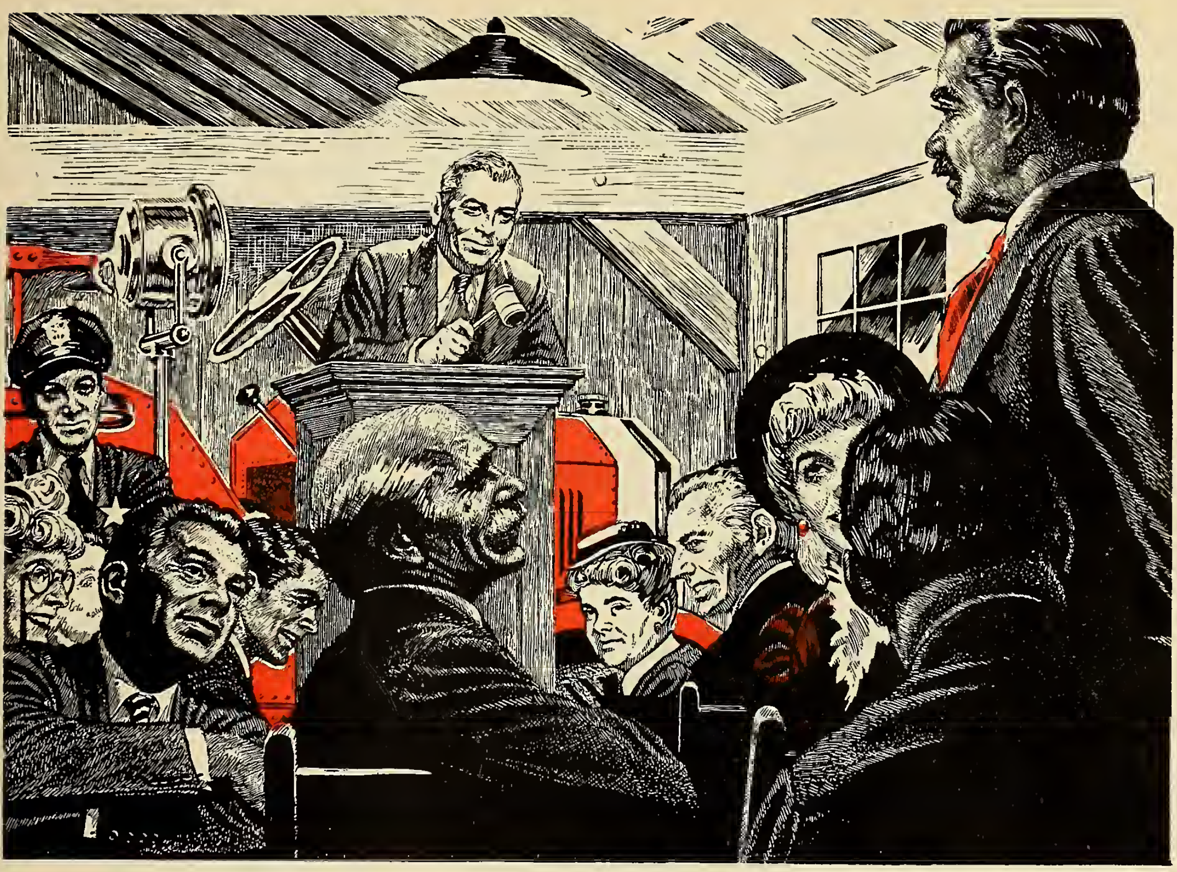

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Shambaugh, G. E., Jr.: J. Iowa M. Soc. 31:373.

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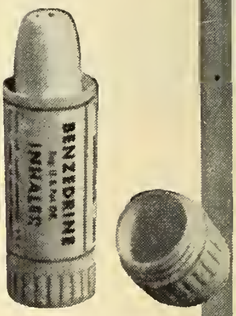

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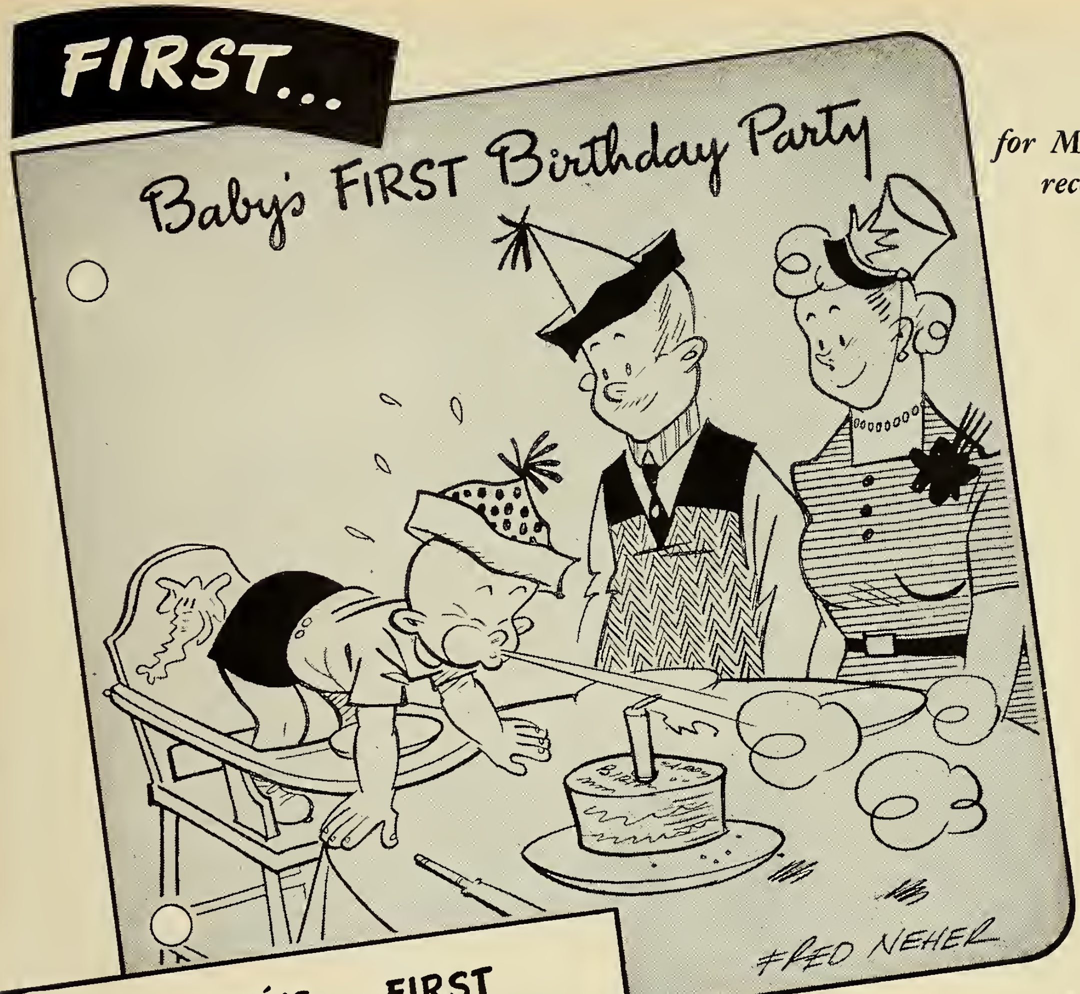
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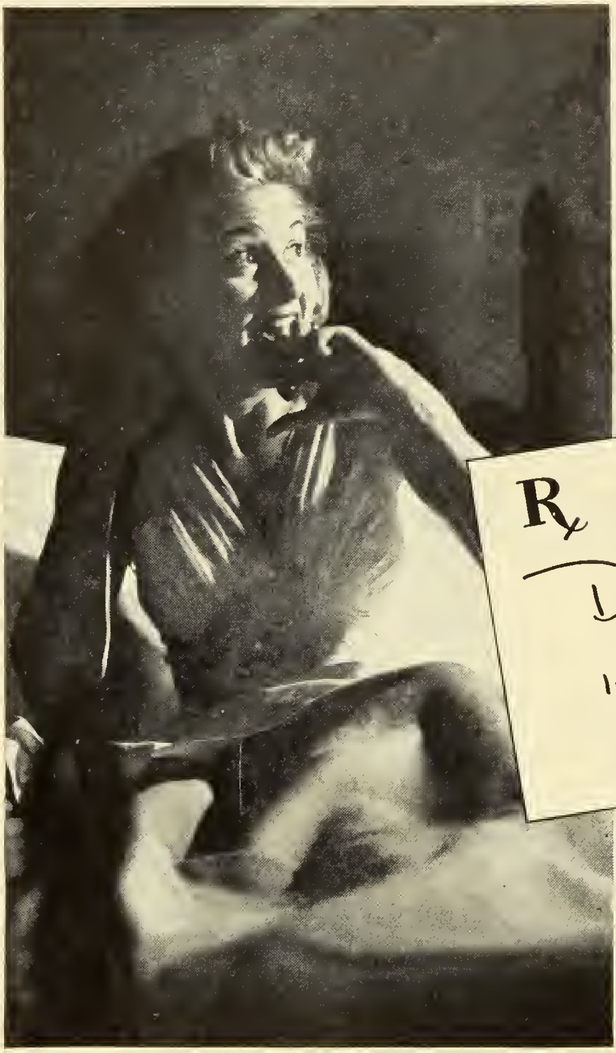

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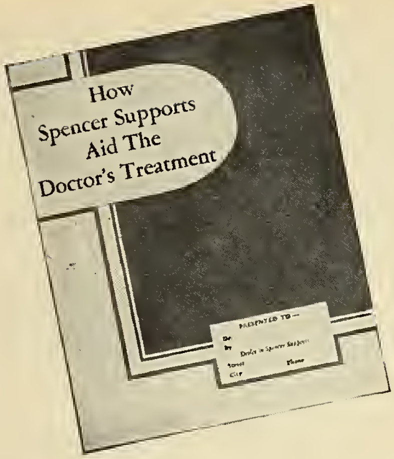
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SUBJECTS

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Antepartum-Postpartum

Postoperative (Spinal, Abdominal, Breasts)

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Spondylolisthesis
Osteoporosis
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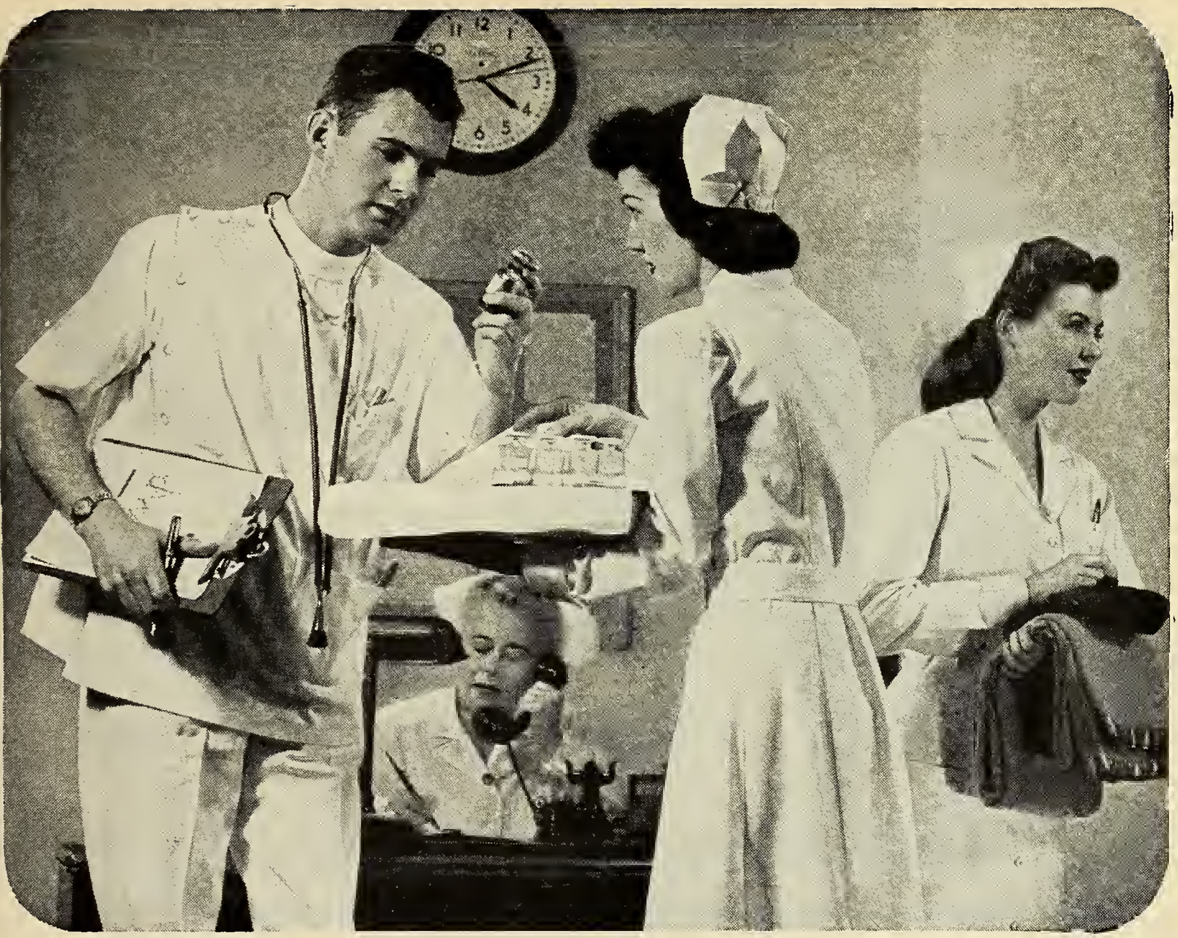

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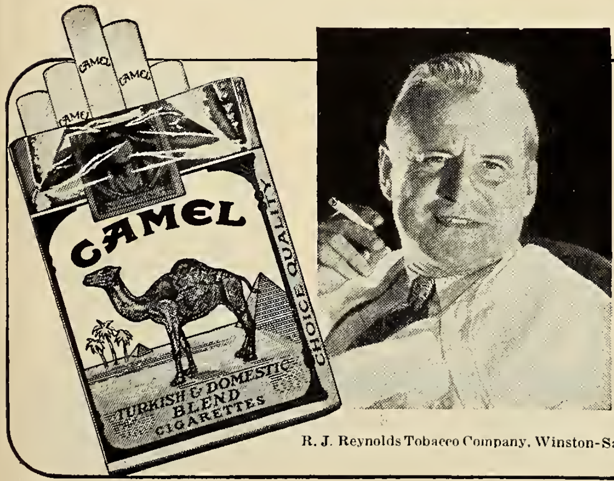

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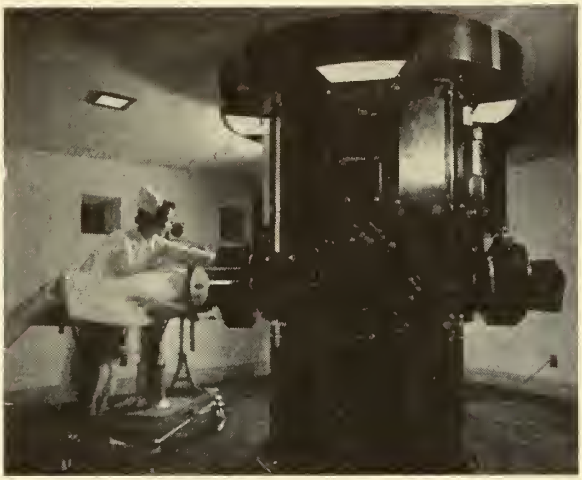

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[1] Am. J. Dis. Child. 66:1 (July) 1943.

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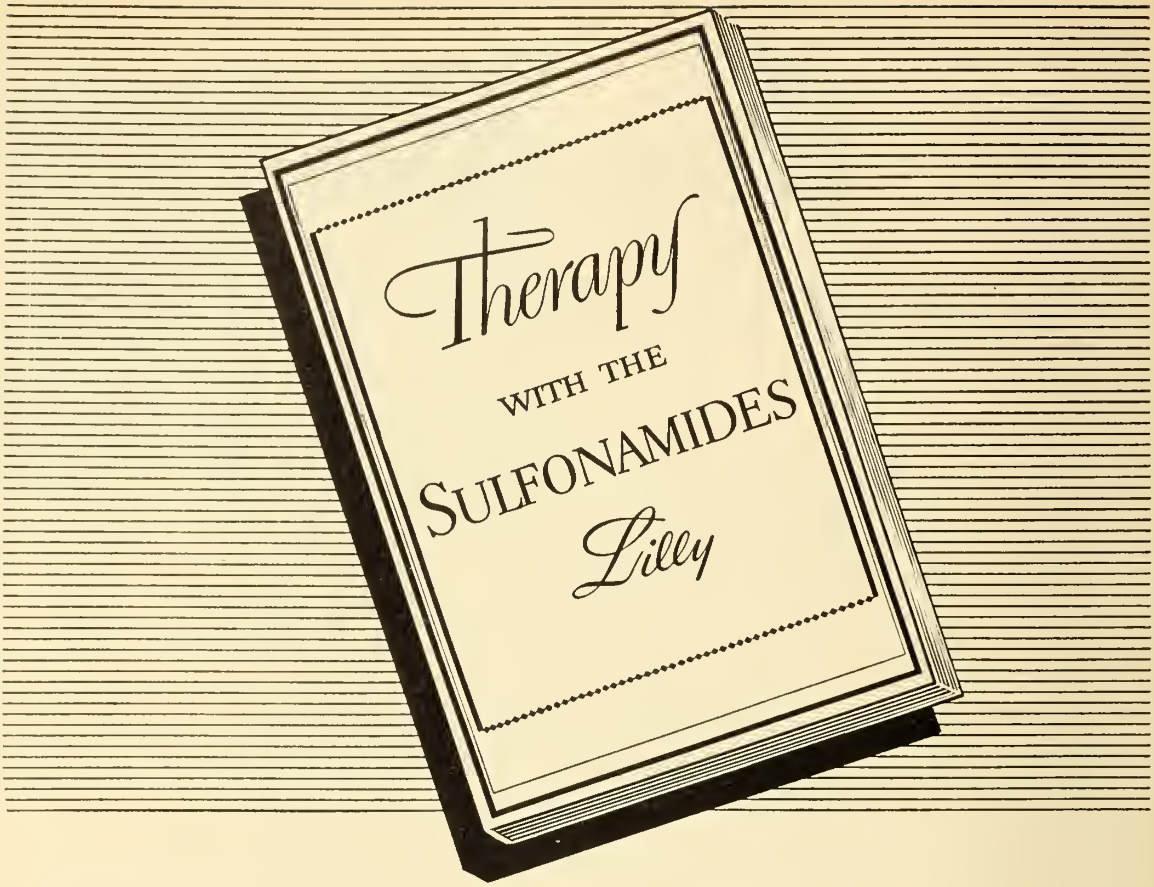
**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154.*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60.

TO THE DOCTOR WHO SMOKES A PIPE: We suggest an unusually fine new blend—COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.



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In 1937 sulfanilamide was introduced into general clinical use. During the next six years sulfapyridine, sulfathiazole, sulfadiazine, and sulfamerazine followed in rapid succession. The vast clinical literature which has accumulated in the interval has been carefully organized and condensed by the Lilly Research Laboratories into an eighty-three-page book entitled *Therapy with the Sulfonamides.* A bibliography of 323 references is included. The discussion is divided between systemic and local administration. Many helpful charts, including "Sulfonamides in Order of Choice for Systemic Use," "Dosage of Sulfonamides for Adults," and "Dosage of Sulfonamides for Infants and Children," are included. Request a free copy of *Therapy with the Sulfonamides* from the Lilly medical service representative or direct from Indianapolis. Sulfonamides, Lilly, for systemic and local administration are provided in a complete variety of dosage forms, subject to your specifications.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 **October, 1946** **No. 10**

THE CENTENARY OF THE DEMONSTRATION OF ETHER ANESTHESIA

OWEN W. PARKER, M.D.

Duluth, Minnesota

ON October 16, 1896, in the amphitheatre of the old Millard Hall of the Medical School at the University of Minnesota, a program was given to commemorate the fiftieth anniversary of the giving of ether for anesthesia at the Massachusetts General Hospital in Boston.

Dr. Burnside Foster, Saint Paul, in his usual brilliant style and Bostonian manner, gave a thrilling, dramatic and eloquent address, describing this great historical event and the two main actors in the drama, Dr. William T. G. Morton of Boston, the dentist, and Dr. J. Collins Warren, the surgeon.

Dr. Foster's words were most inspiring and illuminating to me, a freshman, and I have always remembered the event with great pleasure and interest.

This year, on October 16, another fifty years have passed and it is the one hundreth anniversary of this momentous event. No doubt the occasion is being appropriately celebrated in many places this year and especially at the old Massachusetts General Hospital, where the fiftieth anniversary was notably observed. On the committee of arrangements at that time were such outstanding men as Drs. J. Collins Warren, William L. Richardson, Frederick Shattuck, and William S. Bigelow, while on the honorary committee were Charles W. Elliott, president of Harvard University; Dr. Hunter McGuire, Richmond, Virginia, who attended General "Stonewall" Jackson following his tragic shooting accidentally by his own men; Drs. William W. Keen and William Pepper, Philadelphia; Dr. Henry H. Mudd, Saint Louis; Dr. Nicholas Senn, Chicago; Dr. Charles McBurney, New York; Drs. William Osler and William S. Halstad, Baltimore; Dr. Roswell Park, Buffalo, and others.

Among the addresses made were those by Dr. William H. Welch, Baltimore, Dr. Charles McBurney, New York, and Dr. Wier Mitchell, Philadelphia.

The "Ether Room" has been restored to its original appearance and presents much the same appearance that it did when used as an operating theater. Imagine, if you will, Dr. John Collins Warren, the surgeon in chief, a man short in stature, austere, puritanical, a man of ability, of initiative and force, with the best surgical training of his day. The hour for the operation arrived and Dr. Morton was not on hand. Ten minutes passed and then Dr. Warren, the eminent surgeon, looking around with a smile on his face, slightly sarcastic, suggested that as Dr. Morton was not present, it might be well to let the operation go on as usual. At that moment Dr. Morton came in, breathless from haste, carrying the newly made inhaler, which had just been delivered to him. With a coolness and self-possession in strong contrast to the general nervous tension of the assembly, Dr. Morton proceeded to administer sulphuric ether to a human being for the purpose of eliminating pain by forced anesthesia in a surgical operation. Pouring the ether into the inhaler, he lifted it to the patient's nostrils, allowing the man to breathe the fumes. Watching the patient's face intently and feeling of his pulse, he turned to Dr. Warren who stood near with his surgeon's knife behind him and said quietly, "Your patient is ready, Doctor." Dr. Warren proceeded with the operation, the removal of a tumor from the neck. The operation lasted one half hour, during which time no cry or groan escaped the patient and there was no indication of suffering. At the conclusion Dr. Warren turned to the audience, composed of members of the medical profession, doctors and students, and all the great surgeons of Boston, including the celebrated Dr. Joseph Bigelow and his son, Dr. Henry J. Bigelow, and said in his impressive manner, "Gentlemen, this is no humbug!" Dr. Bigelow remarked, "I have seen something today that will go around the world!"

On the wall of the "Ether Room" is the following legend: "On October 16, 1846, in this room, the operating theater of the hospital, was given the first public demonstration of anesthesia to the extent of producing insensibility to pain during a serious surgical operation. Sulphuric ether was administered by William Thomas Green Morton, a Boston dentist. The patient was Gilbert Abbott. The operation was the removal of a tumor under the jaw. The surgeon was John Collins Warren. The patient declared that he had felt no pain during the operation, and was discharged as well December 7. Knowledge of this discovery spread from this room throughout the civilized world, and a new era for surgery began."

To Dr. Henry J. Bigelow is due the credit of pointing out that this experience showed that ether was "safe, certain, and complete." It was a demonstration of the practicability of surgical anesthesia, which had been dreamed about for many years, and it was this triple feat that constituted the "discovery" and entitled October 16, 1846, to have a special name like that of our national holiday.

The trustees of the Massachusetts General Hospital, soon after the event, made a report according the honor and credit of the discovery to Dr. Morton and presented him with a silver box containing $1,000. Later on Dr. Morton received a prize from the French Academy of Sciences, the Cross of the Order of Vasa from Sweden and Norway, and the Cross of the Order of St. Vladimir from Russia.

In the public gardens of Boston a monument was erected "to commemorate the discovery that the inhalation of ether causes insensibility to pain." The inscription continues, "first proved to the world at the Massachusetts General Hospital in Boston, October 16, 1846." Dr. Morton's deed though not his name is thus honored. Yet another monument stands over Dr. Morton's grave in Mount Auburn Cemetery near Boston, erected by the citizens of Boston and bearing the following inscription written by the late Dr. Jacob Bigelow:

"William T. G. Morton, inventor and revealer of anesthetic inhalation, before whom, in all time, surgery was agony, by whom pain in surgery was averted and annulled, since whom science has control of pain."

On the outside walls of the new public library in Boston are memorial tablets with about 500 names of writers, artists and scientists. Here Boston inscribed Dr. Morton's name.

A still more eloquent expression of the gratitude of Massachusetts is the inscription of Dr. Morton's name upon the base of the dome of the new chamber of the House of Representatives in the State House in Boston, among the selected fifty-three of Massachusetts' most famous citizens—"names selected," as stated at the time of the event, "in such a way that they shall either mark an epoch or designate a man that has turned the course of events." The following names will indicate the general trend of the selection: Morse, Morton, Bell, Emerson, Hawthorne, Holmes, Longfellow, Edwards, Channing, Endicott, Winthrop, John Adams and John Q. Adams, Webster, Sumner, Choate, Everett, Bowdich, and others.

Stimulated by Dr. Foster's eloquent address, I visited the "Ether Room" at the Massachusetts General Hospital in 1906 and consulted literature on the history of ether anesthesia.

I am indebted to the Treadwell Library and to the articles by Frederic A. Washburn, to Dr. Morton's son and wife, to the great address of Dr. William H. Welch and to Dr. Frank Cole, Head of Anesthesia, St. Mary's Hospital, Duluth, for much information regarding this great event.

I am not going into the great controversy over the discovery of ether, as that is a long story.* I have been much interested in it, especially in the story of Dr. Crawford Long of Georgia. I once visited in Georgia and saw a statue of him in the court house yard of a small town. His statue

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*Suffice it to mention the names of the chief actors: Dr. Morton, Dr. Wells, Dr. Jackson, chemist, and Dr. Long.

(Continued on Page 1002)

A BRIEF SURVEY OF PROSTATIC SURGERY

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THE demand for the surgical treatment of obstruction at the vesical neck has increased many fold in recent years, partly because the number of men living past the age of sixty has nearly trebled in the past half century, and partly because modern surgical operations upon the prostate gland have so reduced the risk and discomfort that patients have lost much of their dread of the procedure.

Our knowledge of prostatic disorders has developed slowly. Although Ulassa ascribed difficulties with urination to prostatic enlargements as long ago as the sixteenth century, we still do not know what causes these enlargements. The occurrence of benign hypertrophy has been attributed to sexual overindulgence, to impaired vascularity due to arteriosclerosis, to chronic inflammation, to habitual prolonged voluntary retention of the urine, and to the influence of hormones. Lower has related it to an excess of androgens, Zuckerman to an oversupply of estrogens, and others have postulated an increase of prolans from the anterior pituitary. All three of these hormones have produced enlargements of the prostate in experimental animals, but the histological appearances of these enlargements bear no resemblance to those occurring naturally, and treatments based upon these theories have failed.

Despite the clinical importance of prostatism, deliberate surgical removal of the gland was a late development, probably because of gaps in useful knowledge of anesthesia, asepsis, and pathology. The ancient lithotomists undoubtedly removed bits of prostatic tissue at times, but this apparently added too much to the risk.

Logically enough, the first deliberate operations aimed at the prostate gland were done through the urethra. Paré in 1575, Guthrie in 1834, and Mercier and Civiale in 1856, all devised instruments to incise the gland or to excise bits of it. Bottini devised a cautery for this purpose in 1873, but none of these instruments permitted the surgeon to see what he was doing, and the results were so uncertain that their use was abandoned.

While Amussat is said to have removed a portion of the prostate suprapubically in 1832, this was incidental to a lithotomy, and it is probable that the first deliberate open operation was the perineal morcellation of a carcinoma by Billroth in 1867. Twenty years later, perineal enucleation through a median incision into the bulbous and membranous urethras had become so popular that Goodfellow was able in 1891 to report seventy-two cases with but two deaths, but the ensuing urinary incontinence led to abandonment of this approach.

Zuckerkandl and Voelcker improved results by approaching the prostate extraurethrally from behind, but it remained for Young, in 1903, to devise an extraurethral approach which permitted enucleation of the gland and control of bleeding under direct vision, an operation which has remained essentially unchanged ever since.

In the meantime, however, the frequency of rectal injuries and of urinary incontinence after the perineal operations resulted in a preference for the suprapubic approach. Led by Belfield, several surgeons in 1885 began excising the intravesical median lobe through the bladder, but leaving the lateral lobes behind gave such unreliable results that Fuller, in 1895, developed the suprapubic enucleation subsequently popularized by Guiteras and Freyer. Their functional results were so good as to lead to virtual abandonment, for the time being, of the perineal and transurethral methods.

Many surgeons still practice, with considerable satisfaction, the blind suprapubic enucleation of Fuller, but others have modified the operation considerably; Squier advocated a high incision in the bladder, hoping that gravity would lead the urine out of the urethra rather than out of the incision during recovery. Judd used an incision long enough to permit enucleation and subsequent trimming under vision; and Lower and Harris practiced reconstruction of the vesical neck and primary closure.

The first surgeons to perform enucleation thought that they were removing the entire prostate, but Motz and Perearneau and others subsequently demonstrated that they were enucleating

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From the Urological Division, Department of Surgery, Medical School, University of Minnesota.
Read before the annual meeting of the Minnesota State Medical Association, St. Paul, May 22, 1946.

an encapsulated mass of hypertrophy and leaving behind a surgical capsule of compressed but normal prostatic tissue.

Young soon discovered that those obstructing glands which were fibrous and contracted rather than enlarged could not be enucleated, and devised the first prostatic punch to remove them. This was limited in its usefulness by very poor illumination supplied by a head mirror, and by the lack of satisfactory means of controlling hemorrhage.

In 1913 Bugbee and Stevenson applied to the prostate Beer's method of cystoscopic electrocoagulation of tumors of the bladder with the Oudin current and an insulated electrode. They sought to produce a channel through the middle lobe by repeated electrocoagulation. While this was probably the first transurethral attack upon the prostate under good visual control, it was abandoned because too little tissue was removed.

In 1918, Braasch devised a modification of his cystoscope which permitted removal of tissue under direct vision, but lacked the means to stop bleeding. Caulk (1920) remedied the latter defect by adopting a cylindrical electric cautery to a punch similar to Young's, and did much to popularize the transurethral operation, but his instrument never became popular because of poor visualization, and of troublesome postoperative infections in the cauterized tissue.

In 1926 Bumpus modified Braasch's prostatic excisor and added an electrode for the electrocoagulation of bleeders with current from a spark gap generator. His was the first instrument which permitted removal of tissue and control of bleeding by electrocoagulation with good vision, but it was cumbersome and time-consuming to use. These defects were later remedied by Thompson.

Also in 1926, Stern devised the first resectoscope which removed tissue with a wire loop activated by an undamped or cutting current generated by a radio transmitter tube, but he was hampered by the fact that his current did not control bleeding. This difficulty was overcome by T. M. Davis, who devised an electromagnetic foot switch which permitted him to use an undamped, tube-generated current for cutting, and a damped, spark gap-generated current for electrocoagulation of bleeders. K. M. Walker subsequently devised an insulated sheath for the resectoscope and McCarthy combined the advances of those three workers with his foroblique telescope to produce the first practicable instrument capable of excising tissue with a loop, coagulating bleeders, and affording excellent vision. Not long thereafter, manufacturers began to supply surgical diathermy machines which generated cutting currents by means of radio tubes, coagulating currents by means of spark gaps, and which were equipped with selective foot switches.

Nesbit subsequently modified the McCarthy instrument so that it could be manipulated with one hand. Employing the Oconor rectal sheath, he was able to use the other hand to push prostatic tissue into the path of the loop, and to judge by palpation how much prostatic tissue was left. This was a very important advance, since it permitted a much more complete excision of tissue. Meanwhile, Foley had devised his now almost universally used hemostatic bag catheter.

While these direct surgical attacks upon the prostate were being developed, several indirect methods had been tried and found ineffectual. Castration, popularized by White around 1895, proved to be too uncertain in its results and to have too many unpleasant by-effects. Bier's ligation of the internal iliac arteries, designed to deprive the gland of its blood supply, turned out to be dangerous and unsatisfactory. The intraprostatic injection of sclerosing agents, proposed by Heine in 1874, failed of its objective. Hormones have also failed to influence benign prostatic hypertrophy favorably. Testosterone, in addition to being useless in causing shrinkage of the gland, was shown by Huggins to promote growth and metastasis of prostatic carcinoma; the estrogens proved unsatisfactory in benign lesions, and so did Lower's inhibin.

Thus, the urological surgeon has three types of operation available in prostatism. He should try to make the operation suit the needs of the patient, rather than the reverse.

Irrespective of the type of prostatic operation to be done, careful attention must be given to the general condition of the patient, particularly as concerns the degenerative diseases (cardiovascular disorders, diabetes). One must remember that the patient may dehydrate himself in an effort to reduce the frequency of urination or to prolong the interval between catheterizations. Moreover patients with impaired renal function may lose their appetites and develop vitamin and other nutritional deficiencies.

Another important consideration is the renal function. If it is normal, as judged by the urea nitrogen, nothing is to be gained by preliminary drainage of the bladder. If it is slightly impaired, a brief period of intermittent catheterization with forced fluids may suffice to restore it to a satisfactory state, as evidenced by a normal urea nitrogen, good appetite, good urine output, and satisfactory general appearance. The inlying catheter is avoided if possible because it may irritate the bladder, and so reduce the capacity as to interfere with the easy performance of any but perineal prostatectomy.

If there is severe impairment of the renal function, an inlying catheter and forced fluids should be tried with the proviso that, if improvement is not rapid, suprapubic cystostomy should be done.

It is always desirable to culture the urine when the patient is first seen so that the proper urinary antiseptic can be used at once if needed (in general, sulfathiazole for Gram negative, and penicillin for Gram positive organisms). Many favor the routine use of small doses of a sulfonamide whenever repeated catheterization is necessary.

It is usually desirable to have matched blood, or at least a matched donor, on hand when operation is begun, so that transfusion may be started at once if bleeding is at all excessive.

Spinal anesthesia is used in all cases unless specially contraindicated, because it is practically free from risk if properly used, and because it, more than any other type of anesthesia, insures a quiet bladder and relaxed urethra.

Bilateral vasectomy is done routinely just before the prostatectomy is started.

As soon as the patient is in position on the table, a drip of 10 per cent glucose in distilled water is started intravenously. It aids in maintaining the blood pressure, replaces fluid lost (bleeding, perspiration) and promotes diuresis, thus minimizing the reflux of irrigating fluid into the ureters during the transurethral operation. In this connection, it is important to keep the pressure at which the irrigating solution enters the bladder at as low a level as possible, lest the water enter the open prostatic veins and produce hemolysis in the circulating blood. This may lead to a reaction not unlike that seen after the transfusion of incompatible blood, and may be responsible for fatalities. It also seems likely that blood may be hemolyzed in the bladder and washed into the circulation. It may prove desirable to use a 5 per cent solution of glucose rather than plain water as the irrigating fluid.

Hemostasis during and at the end of operation is of enormous importance. Elderly patients stand the loss of blood poorly, and many a stormy convalescence or death is due directly to an excessive but overlooked loss of blood during or after operation. Simple blood loss may, by some poorly understood mechanism, apparently lead to uremia. In connection with after-bleeding, it is important that the blood pressure be at or near its usual level at the end of the operation; otherwise, a postoperative rise will lead to hemorrhage, and may turn the tide against the patient. In transurethral resection, this means careful electrocoagulation of bleeding points; one should not depend upon traction upon an inflated bag in the prostatic fossa except in case of dire necessity. It is uncertain in controlling bleeding, and may damage the external sphincter.

In suprapubic prostatectomy, I prefer to insert a pack of vaselined gauze into the prostatic cavity after large individual spurters have been controlled by suture. In perineal prostatectomy one can ordinarily ligate individual bleeders; this is one of the best features of this operation.

In the postoperative care, free, unobstructed drainage of urine is of paramount importance. After transurethral resection, I prefer to use a two-way hemostatic bag catheter (Foley-Alcock) with a continuous drip of sterile 0.5 per cent saline.

A size 24 Foley catheter with a 30 c.c. bag is ordinarily used after perineal prostatectomy, and a size 32 or 34 mushroom catheter makes a satisfactory suprapubic tube after the suprapubic operation. These tubes are best irrigated periodically by hand during the first twenty-four hours. Any complaint of distention of the bladder requires prompt evacuation of clots by the surgeon himself. The time to take the patient back to the operating room for control of excessive postoperative bleeding is when one is wondering whether it will be necessary. Here again, bleeding demands prompt transfusion.

Postoperatively, fluids should be given intravenously in sufficient quantity to replace all fluid lost by whatever route, and to produce an output of at least one thousand cubic centimeters of urine per twenty-four hours. However, if the output is low in relation to the fluid intake, one must check the urea nitrogen of the blood, and resist the temptation to overload the cardiovascular apparatus by an exessive fluid intake.

Continuous nasal suction is used if any ileus develops, and suitable antiseptics are given if febrile reactions occur. One must be very cautious in using sulfonamides in the presence of renal damage; if they are used, blood levels must be determined frequently.

The average patient is hyperventilated several times daily, turned frequently, and is encouraged to move about in bed and to cough. In the absence of complications, he sits up in a chair on the first postoperative day, and walks about the room on the second or third day. In the case of suprapubic prostatectomy, the early ambulation is made safer by using a transverse incision through the skin and rectus sheath, and by closing it with 32 B & S gauge stainless steel wire.

The catheter is removed after transurethral resection on the third postoperative day, and after perineal prostatectomy on the eighth postoperative day. After suprapubic prostatectomy, an inlying catheter is inserted and the suprapubic tube is removed as soon as the urine has remained free of blood for a minimum of twenty-four hours. The time of removal of the catheter depends upon the state of the wound, and upon the absence of leakage of urine therefrom.

After removal of the catheter, one should check the residual urine on two consecutive days if there is any difficulty in voiding. The catheter is left in for a day or two if the residual exceeds one hundred cubic centimeters, after which the same routine is followed.

In general, one may say that the stay in the hospital after open operations averages two to three times longer than that after transurethral resection. Also, the incisions cause discomfort which is absent after the closed operation. The risk to life is greatest from suprapubic prostatectomy, averaging about 8 per cent in large series in good hands, although this may be lower since the advent of the sulfonamides, penicillin, and the more intelligent use of transfusions. The functional results of the suprapubic operations are good.

I prefer to use it in those cases in which the prostate is very large, or in which there is a vesical calculus too large for litholapaxy, a stricture too high for avoidance by a perineal urethrotomy, or when ankylosis of the hips prevents the use of the position necessary for the transurethral or perineal operations.

The mortality of perineal prostatectomy is low, but the incidence of urinary incontinence is too high, in my opinion, to justify its routine use. I prefer to reserve it for localized carcinoma of the prostate, because it offers the only chance of cure in this condition.

Transurethral resection is performed, with a mortality of about 2 per cent, in all other cases. The postoperative hospital stay averages eight days, convalescence is usually comfortable, and the incidence of permanent incontinence is small.

INSULIN AND ANTIVIVISECTION

An appeal to enlightend citizens to refrain from supporting antivivisection activities was issued by the American Diabetes Association at its recent meeting in Toronto celebrating the silver anniversary of the discovery of insulin.

The appeal was made on the basis of the role played by experimental dogs in the development of insulin.

The statement passed by the Association was a resolution as follows:

"Whereas, the American Diabetes Association at this meeting is commemorating the 25th anniversary of the discovery of insulin; and whereas insulin has been instrumental in restoring the health and saving the lives of countless human beings suffering from diabetes; and whereas the great work of Banting and Best in discovering insulin, and the subsequent scientific investigations clarifying its actions and uses, would have been impossible without the use of dogs and other domestic animals as experimental subjects; therefore be it resolved that the American Diabetes Association hereby testifies to the value of the use of dogs and other domestic animals for purposes of scientific research; and urges all enlightened citizens to refrain from supporting the misguided efforts of so-called antivivisectionists, who constantly try to hamper the advancement of scientific medicine."

DOUBLE AND ACCESSORY URETHRA

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CONGENITAL abnormalities of the urethra are rare. For this reason, cases when seen should be added to the record. Care should be exercised in description so that the newly reported cases may be classified. To this end we shall refer to the literature, outline an accepted classification and describe the cases accordingly.

A perusal of the literature reveals that isolated reports of cases made their appearance during the nineteenth century. These cases, with later ones, were reviewed by Mackenzie in 1916. More recently the literature was reviewed by Perlmann when he reported his case in 1930 and by Lowsley when he reported two cases in 1939.

From the complete double penis to its congenital absence are many anomalous variations. These abnormalities, in themselves, do no harm. As a result, one does not see these patients unless they are undergoing a general physical examination for some other reason, or the part becomes diseased.

The largest number of reports of cases are found in the foreign literature, and for similar abnormalities such terms as "double urethra," "urethra duplex" and "accessory urethra" may be used. This leads to confusion, which can only be cleared by proper classification.

A true duplication of the urethra occurs only with a double penis and is extremely rare. Of almost equal rarity is the double urethra in a single penis, where the two channels lie parallel, both terminating in the bladder. Bernadet's case is an example. Perlmann found only seven cases in the literature, his own case included. To this we may now add the cases of Nicoletti, Heymann and Delvigne, whose case in 1934 brought the total to ten.

The more common anomalies, of which there are several varieties, fall into the category of accessory urethra. Taruff studied the varieties and in 1891 offered a classification which, in general, has been followed by subsequent investigators. He distinguished four main types. Briefly his classification is as follows:

Accessory urethra

1. Blind-ending canals

(a) The canal opens on the surface of the penis but does not communicate with the urethra or bladder.

(b) The canal opens into the urethra but does not open on the surface of the penis.

2. An accessory canal which conveys seminal fluid and is independent of the urethra. This has been referred to as a seminiferous canal.

3. An accessory canal which communicates with both the urethra and the surface of the penis. This may be termed simply a "bifurcation of the urethra" or a "uriniferous canal." Berger reported a case in this classification.

4. Certain congenital urethral fistulas which usually arise from defects in the embryonic cloaca.

The two cases which we observed are distinctly different from each other according to this classification and therefore will be described separately. We shall then indicate to which part of the classification each case belongs.

Report of Cases

Case 1.—A white man, twenty-six years of age, was sent for examination because of a discharge from the urethra. The patient had had twenty-nine months of active military service and was in excellent health. The general physical examination gave grossly negative results. Urologic examination revealed a thick, purulent discharge which exuded, not from the urinary meatus, but from a small opening in the glans penis just above the urinary meatus (Fig. 1). Smear and culture established the fact that the infection was nonspecific. Following treatment with penicillin, the discharge stopped. As the accessory canal remained dry, a 5 F. ureteral catheter was passed into the opening. The catheter easily passed to a depth of 14 cm. Roentgenograms were taken after a small amount of skiodan had been injected. The roentgenogram showed a small amount of contrast media extending from the tip of the catheter outlining a small irregular tract. Repeated injections of skiodan showed the tract to end blindly. The blind end was dilated in cauliflower fashion and was situated beneath the symphysis pubis (Fig. 2). Examination of the patient's bladder and the upper part of his urinary tract failed to reveal any additional information. This was the only abnormality of the genito-urinary system.

An important observation in this case was the prompt response of the infection to penicillin. It was explained to the patient that the accepted treatment was surgical and, if the infection persisted, surgical excision of the accessory canal would be necessary. The patient was then closely observed for six months but no

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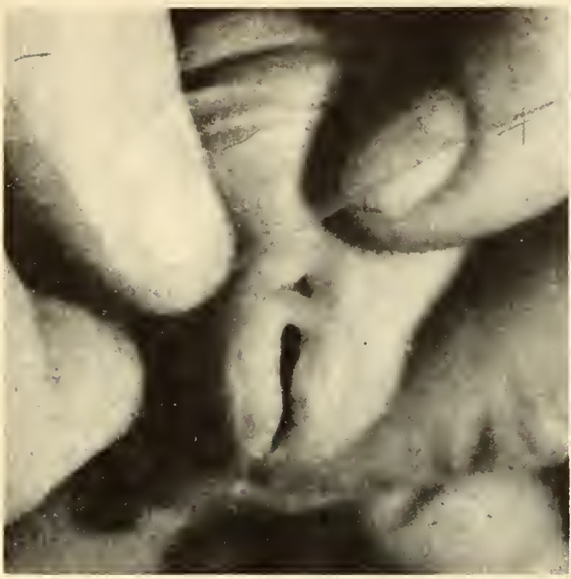

Fig. 1. Glans penis, demonstrating the two meatuses.

recurrence of the infection appeared. It seems possible that this may mark another step in our chemotherapeutic progress in the treatment of infections which previously required surgical intervention.

Case 2.—A white man, forty-five years of age, reported at the clinic in December, 1945, complaining of backache. Examination disclosed hemivertebra of the fifth lumbar vertebra. Because of a severe sudden attack of lumbar pain, the patient was sent for urologic investigation.

Special examination disclosed a congenital abnormality of the penis, which appeared as two incompletely formed organs which had fused. The point of fusion of the glans was distinctly marked by a cleft on the dorsal and ventral surfaces. Each glans was further distinguished by having a distinct urinary meatus (Fig. 3, *a and b*). Since congenital abnormalities of the genito-urinary system are frequently multiple and since the patient gave a history suggestive of renal colic, an excretory urogram was requested. Here one saw bilateral duplication of calices, pelves and ureters (Fig. 4). Cystoscopy was then performed to determine whether the bilateral duplication was complete and also to study further the abnormal penis and urethra.

Through the larger meatus the cystoscope passed easily. The bladder appeared normal; only one ureteral orifice was seen on each side. The orifices functioned normally and clear spurts of urine were seen. During a further search for an ectopic ureter, however, an orifice was seen just inside the vesical neck. No spurt was seen and an attempt at ureteral catheterization failed. It became apparent that this was the vesical end of the second urethra.

The patient gave an interesting history. When he was a young man he had a double stream and, when urinating, could void with equal force through both channels. During World War I a nonspecific infection developed which caused a discharge from both channels. When he was treated, his condition aroused medical interest. The medical officers passed catheters through both channels into his bladder. The patient related that since that time the stream had decreased in caliber through the second channel, so that at the time of observation here it was a thin stream with dribbling. He had also observed that he urinated through this channel only when his bladder was unusually distended. The patient stated that he thought he had a "stricture" which had developed since his infection. A urethrogram made of the second urethra showed a very definite obstruction and this may well be the case (Fig. 5). The stream from the normal urethra had remained unchanged.

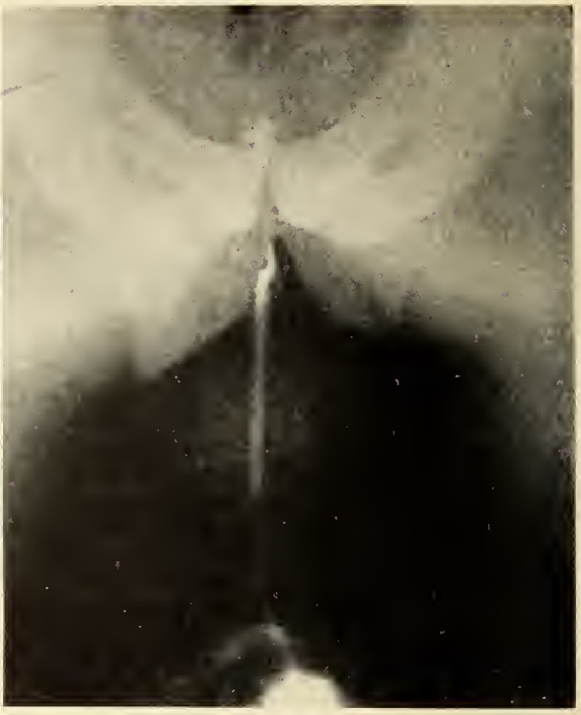

Fig. 2. Radiopaque medium outlining accessory urethra. Note blind end dilated in cauliflower fashion behind the symphysis pubis.

As regards the ejaculation of seminal fluid, before the development of the previously described stricture, there was ejaculation through both urethral channels. This was brought to the patient's attention since he had to massage the second channel in order to evacuate the secretion and prevent a continued dribble.

That the second urethra did not function normally was brought out by the fact that the dribbling of urine was almost an incontinence. After the patient voided he had to strip the second urethra dry. If he did not do this he noticed a continual dribbling. The second urethra had the tendency to fill from the bladder gradually and a sudden movement or crossing of the legs squeezed the urine out of the urethra. While Figure

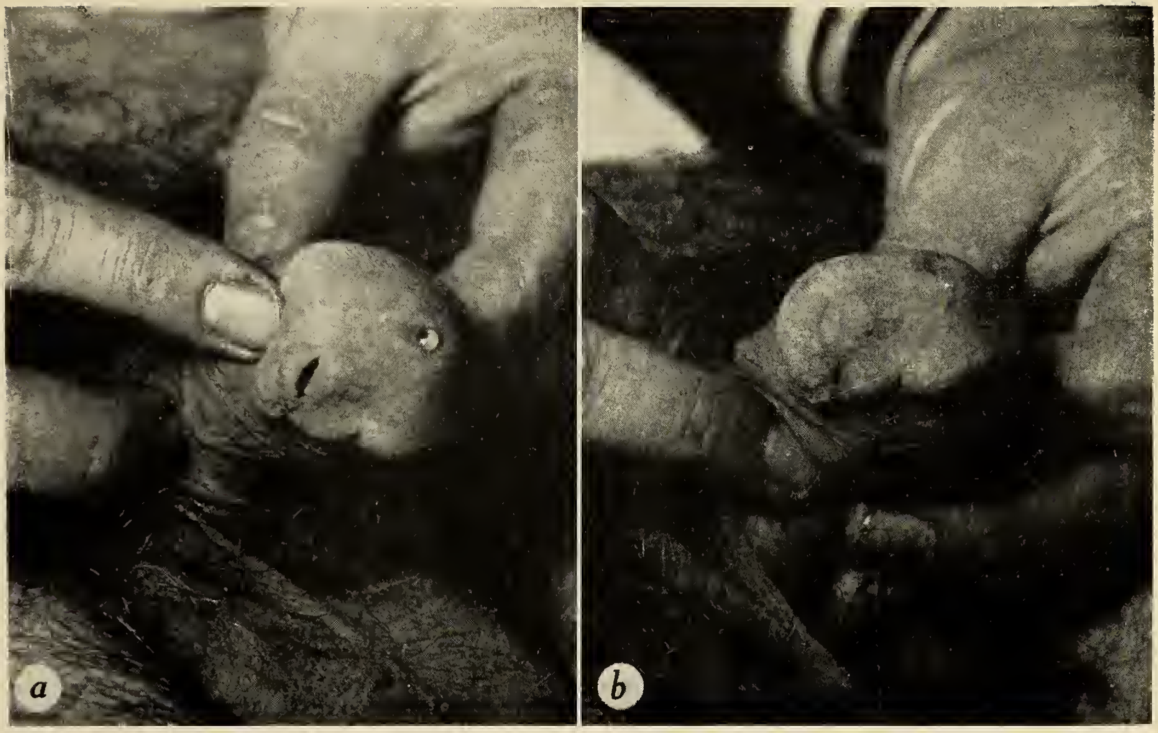

Fig. 3, *a.* A drop of urine at the orifice of the abnormal meatus. *b.* Cleft between two incomplete glandes penis.

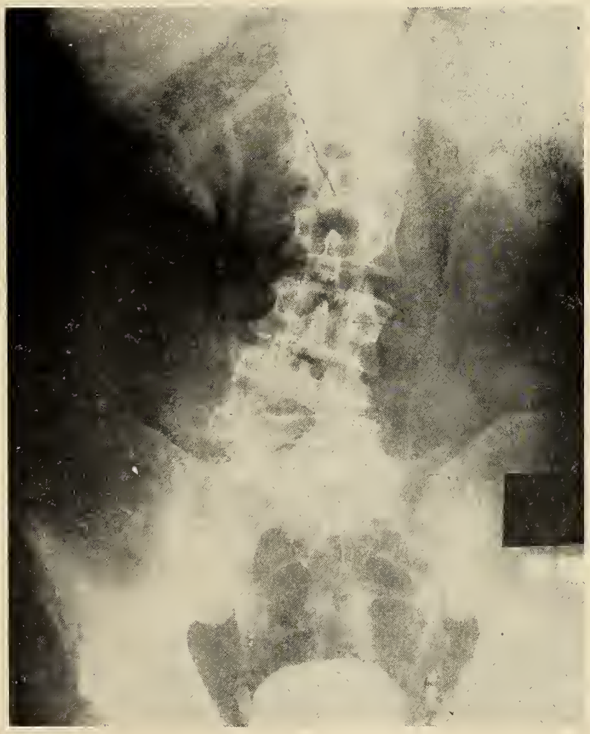

Fig. 4. Hemivertebra of the fifth lumbar vertebra; also bilateral duplication of calices, pelves and ureters.

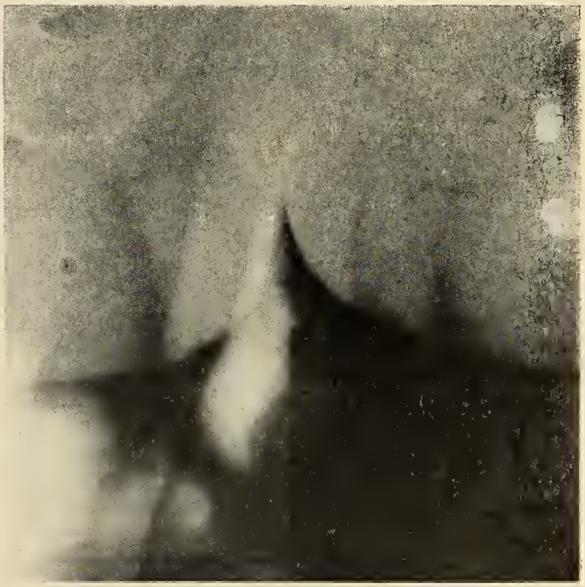

Fig. 5. Distended abnormal urethra filled with contrast medium.

3 a was being made, a drop of urine appeared at the second urinary meatus while the meatus of the normal urethra, although held open, remained dry.

Comment

The first case is an example of accessory urethra. Since the accessory urethra consists of a blind-ending canal 14 cm. in length which did not communicate with the urethra or bladder, it belongs to group 1 (a). Lowsley reported forty-two such cases in the literature up to 1939, his two cases included.

The second case is of a type more rare, and of much more interest. It is an example of a double urethra in a single but anomalous penis. Perlmann reported a case of this type in 1930 as the seventh. We were unable to find the report of a single case since that time. Of added interest is the fact that this patient demonstrates the multiplicity of congenital anomalies, presenting bilateral duplicated calices, pelves and ureters and hemivertebra of the fifth lumbar vertebra.

These patients also demonstrate the fact that these congenital anomalies do no harm and go unobserved unless they are complicated by disease or are found during examination for some other cause.

Summary

Two cases of anomalous urethra are reported and classified. They are of two distinct types: (1) an accessory urethra 14 cm. long of the blind-ending type, which opened on the surface of the glans penis and did not communicate with urethra or bladder; (2) a complete duplication of the urethra in a single but anomalous penis. The two urethras opened on the surface of the glans and transversed the penis, both terminating in the bladder.

The patient described in Case 1 reported for examination because of infection of the accessory canal. This was promptly cleared up with penicillin and did not recur during an observation period of six months. It is suggested that this type of treatment may obviate, in many cases, complete excision of the accessory canal.

The patient described in Case 2 came to the orthopedic department because of severe backache. Orthopedic examination revealed hemivertebra of the fifth lumbar vertebra. Urologic examination revealed a bilateral duplication of calices, pelves and ureters in the upper part of the urinary tract. Then a complete duplication of the urethra in a single anomalous penis was found. This case demonstrates the multiplicity of congenital anomalies.

Urethral anomalies are seen only when the part becomes diseased, or constitute an incidental finding on general physical examination for other causes.

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THE CENTENARY OF THE DEMONSTRATION OF ETHER ANESTHESIA

(Continued from Page 994)

is also in the hall at the capitol in Washington, D. C., along with Alexander H. Stevens, Vice President of the Southern Confederacy, representing Georgia's two most distinguished sons.

Dr. Morton died in New York City of cerebral hemorrhage while riding with his wife in a park. He was taken to St. Luke's Hospital and was there recognized by the chief surgeon, who turned to the house physicians and said, "Young gentlemen, you see lying before you a man who has done more for humanity and for the relief of suffering than any man who has ever lived."

I have been prompted to prepare this communication in commemoration of the one hundredth anniversary, with the hope that it will prove of interest, and "lest we forget."

SOME EXPERIENCES IN THE TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA

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OBVIOUSLY, from the title and in the allowed time no attempt can be made to discuss chronic otitis media exhaustively. Rather, a few of the problems encountered in treating chronic otitis media will be mentioned along with our impression as to how to combat them.

In the first place, a definition of what is meant by the term chronic otitis media is proper. According to Dench[2] any aural discharge which persists in spite of adequate therapy for more than three months should be considered chronic. This attempt at differentiation between acute and chronic otitis media on a purely temporal basis is hardly scientific. The pathologist has pretty exactly differentiated the two histologic states, and time has nothing to do with it. A better definition is given by Boies[1] when he states that "chronic suppurative otitis media is a continued suppuration from the middle ear following an acute necrotic otitis media or a primary suppuration in the middle ear with hyperplastic mucosa; uncommonly it occurs following an invagination of epithelium from Shrapnell's membrane to form a cholesteatoma without pre-existing perforation; or an ordinary otitis media in a previously normal middle ear." Thus an infection may qualify as an acute infection only as long as it is histologically acute, and is chronic as soon as it meets the requirements of the pathologist. It is then possible for an aural infection to be chronic within hours of its inception. It is therefore those ears in which bacterial invasion, either by thrombosis of venous drainage or nutrient arteries causes devitalization of tissue of the middle ear in which chronic infection develops and this certainly does not occur only after ninety days.

As far as the chronic ears are concerned, it is obvious that they mainly can be treated without surgical intervention particularly if their chronicity is recognized early and the necrotic process is not permitted to progress arbitrarily under the guise of acute infection, for two or three months. There will be a small percentage of middle ear infections, however, which will necessitate operation and it is about these that this paper is chiefly concerned.

To evaluate chronic infection of the middle ear properly, some sort of classification should be in mind. Obviously it is impossible to construct any hard and set rule that will infallibly fit each case, but for clear thinking and generally intelligent diagnosis some formal arrangement should be available. Ersner[3] divides the chronic ears simply into two groups and calls them benign and perilous. This is probably oversimplified. Lillie's[5] classification seems more complete and gives one a fairly accurate guide in diagnosis and therapy of chronic suppurative otitis media. He has four types.

Type I is characterized by a thin mucoid discharge with little or no odor. The discharge comes from a perforation which is in the anterior quadrant of the drum membrane, and the discharge is chiefly from the eustachian tube. Evidence of destructive disease in the middle ear is lacking. This discharge is increased and more purulent during head colds. Contributing factors in the continuation of the discharge are pathologic conditions of the nose and the nasopharynx.

Type II is characterized by pathologic changes confined to the middle ear. The perforation is central, usually large, and the middle ear is filled with mucopurulent or purulent secretion. The odor is fetid but saprophytic changes may suggest caries or cholesteatoma. Granulation tissue or polyps may be present over the promontory. No definite caries is evident, although the ossicles may have been destroyed. There may be evidence that the tube is open and discharging. There is no evidence of disease in the attic.

Type III has its most striking pathologic change in the attic, although the conditions described in Types I and II may be associated. The odor of the discharge is foul. It may be scanty. The perforation is in Shrapnell's membrane or along the posterior margin of the tympanic membrane. Cholesteatoma is usually present.

Type IV contains all cases in which there are

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signs of extension of the disease to the labyrinth, meninges, brain or facial nerve. Cholesteatoma is invariably present. Surgical intervention is positively indicated.

In discussing chronic middle ear infection the term cholesteatoma is invariably used and an explanation of the term is proper. A true cholesteatoma is infrequently seen and practically never in direct association with the ear. It has no relationship to chronic infection, but is the result of an embryonic rest with proliferation of epithelial tissue. What is meant when the term is used in otology is really a pseudocholesteatoma. Of the pseudocholesteatomas there are two kinds, namely primary and secondary. The primary pseudocholesteatoma results from the invagination of Shrapnell's membrane (as a result of negative pressure in the middle ear) into the epitympanic space, as already mentioned. Infection here is incidental since actually the middle ear and related structures are not really directly involved, but when destroyed are destroyed as a result of pressure necrosis. The secondary pseudocholesteatomas are actually related to infection and are due directly to the consequence of two different mechanisms and may be classified under separate subheadings. Lederer[4] describes one type as due to invasion by the squamous epithelium of the external ear canal, of the middle ear mucosa, in the presence of a marginal perforation of the pars tensa of the tympanic membrane or through a perforation of Shrapnell's membrane. The squamous epithelium simply replaces the mucous membrane and may eventually line a fair part of the tympanic cavity, and even by way of the additus may line the mastoid antrum. This covering desquamates here as normally, and the residue causes the accumulated mass which is called a cholesteatoma. The other type of secondary pseudocholesteatoma is also associated with chronic infection. By a process known to pathologists as metaplasia, the mucous membrane of the middle ear or antrum may in the presence of chronic infection change into squamous epithelium. Once this takes place, the gradual spread of the epithelium may take place with the same ultimate result as in the case of the pseudocholesteatoma resulting from direct extension. This explains, however, a certain percentage of pseudocholesteatomas which are found in chronically infected ears in which there is no marginal perforation nor perforation of Shrapnell's membrane.

During my Fellowship at the University I have had the opportunity of observing a fairly large number of chronic suppurative middle ears. Of these, forty-eight have come to operation, twenty of which I have operated upon. It is becoming quite obvious to me that if operation is limited to the ears that fit into Type IV of the above classification and those of Type III which after adequate attempts at non-surgical therapy persist in draining, and if the operation is thoroughly done, that healing is quite prompt and the results satisfactory at least from the otologist's point of view. True, in some cases the eustachian tubes may discharge as a result of acute upper respiratory infections, but this is not a serious symptom and puts the ear in the Type I class.

In reviewing the results of radical mastoidectomy or, more properly, tympanomastoidectomy or some modification of the same, I have been impressed by what appears to be significant change in postoperative care. That is that during the early postoperative period there is a necessity to clean the depth of the wound to prevent it from filling with secretion. This used to be done by careful dry wiping. The fine film of granulation over the surface of the bowl, which forms the trellis upon which epithelium should eventually grow to line the cavity, is traumatized considerably by the dry wiping if thoroughly carried out. This resulted in overgrowth of granulation and failure of complete epithelization. To discontinue cleansing of the wound is impossible, so an effort was made to substitute aspiration of the bowl with negative air pressure. This has been done routinely of late, and it is my impression that this change in technique has hastened the epithelization of the radical cavities.

Another newly added variation in our technique is the administration of a therapeutic dose of intramuscular penicillin postoperatively for three to five days. Since the radical cavity is of necessity an infected wound it seems reasonable that the use of penicillin may cut down the amount of exudate postoperatively and hence hasten epithelization, which of course is most desirable. Possibly the topical use of penicillin in the wound might be better and will probably be given a trial.

Finally I should like to suggest that the Lem-

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INTRA-OCULAR MALIGNANT MELANOMAS OF THE CHOROID

Report of Three Cases

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ALTHOUGH the incidence of intra-ocular malignant melanomas is low, their importance arises from the uniform destruction of the eye affected and a strong tendency to metastasis with a resultant high mortality. Their incidence is estimated by Duke-Elder[6] at only two to six cases per ten thousand eye patients. There is no sex partiality. The average age incidence is fifty years. About 45 to 50 per cent occur in the fifth or sixth decade of life but they may occur at any age. There is no known hereditary influence, differing in this regard greatly from retinal gliomas. Fifteen per cent of intra-ocular malignant melanomas arise in the iris and ciliary body, 85 per cent are choroidal and the majority of these are in the posterior half of the globe.

Until recent years there has been considerable dispute relative to the histogenesis of intra-ocular malignant melanomas. They have been variously classified as melanosarcomas, melano-epitheliomas, and neuroblastomas. The present-day concept quite generally accepted is that they are of neurogenic origin originating from the cells of the sheath of Schwann and therefore from neuroectoderm. This view was first advanced by Varocay in 1910, later supported by Masson, Laidlow and Murray. In 1937, Georgianna Theobald[9], after an exhaustive histologic study of seven malignant choroidal tumors demonstrated quite conclusively in each case a neurogenic origin from the Schwann cells of the ciliary nerves. It is interesting to note that Ernst Fuchs in 1882 observed that choroidal tumors usually begin in the outer layers of the choroid, in the layers of Haller, Sattler and the suprachoroidea. It is in these layers where the nerve plexuses are most abundant.

Choroidal malignant melanomas arise either as a circumscribed tumor or much more rarely as a diffuse infiltration of the uvea. The former originate as an elliptical mass of tumor cells which expand to rupture Bruch's membrane and appear as a globular mass protruding into the vitreous, pushing the retina ahead of it. The retina may remain adherent to the tumor mass or be widely separated by an accumulation of sub-retinal fluid. If undisturbed, the tumor increases in size until irritation from it may provoke a glaucoma, iridocyclitis or extra-ocular extension. The diffuse or infiltrating type is a rare form. Its slow growth, diffuse invasion of the uvea, long preservation of vision and general absence of objective signs lead to difficult and late diagnosis but early local and general metastasis.

The clinical manifestation of these tumors is indeed an interesting phase of this malady, full of intrigue. Following the suggestion of Knapp in 1868, the classical clinical evolution is described in most textbooks, to develop in four stages: (1) a symptomless stage, (2) a glaucomatous stage, (3) a stage of extra-ocular extension, and (4) a stage of metastases. However, many aberrations from so simple a plan have been recorded. Metastases may occur in the first stage. A rise of tension may never occur. In fact, Dunnington[7] in 1938 reported a lowered tension in 63 per cent of fifty-five cases, and he pointed out that glaucoma is a relatively late complication.

The symptomless stage necessarily leads to a loss of much valuable time and may cover a period of from one to several years. It may be considered good fortune for a choroidal tumor to arise at the macula causing an early disturbance in vision, facilitating an early diagnosis. A bullous detachment over a tumor may cause a field defect to warn the patient relatively early. Probably more often the late toxic signs of glaucoma or iridocyclitis arouse the patient and then the confusing picture may temporarily lead to an erroneous diagnosis.

Cloudy or opaque media make diagnosis difficult or impossible before enucleation in a high per cent of cases. Burch and Camp[1] in 1943 reported twelve of 113 undiagnosed before enucleation, two of these in phthisical eyes. Terry and Johns[8] in 1935 report forty-two of ninety-four cases of tumor neither diagnosed nor suspected before enucleation.

An expression of prognosis in percentage after enucleation is made very difficult by the interacting factors of cytology, reticulin content, age of

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the patient, age of the tumor—that is, the length of time the tumor has been present—tissue resistance and completeness of removal.

However, the prognosis of these tumors is based on general rules as with any malignancy, but the classification contributed by Callender[2] in 1931 has facilitated greatly a more accurate means of prognosis. Callender's classification, based on cytological studies, embraces four groups: (1) spindle cell type with subtype A and B, (2) fasicular type, (3) epithelioid type, and (4) mixed cell type. The epithelioid and mixed cell types are the more malignant while the spindle cell subtype A is the less malignant. Callender and Wilder[3], to supplement the cytological classification, have described a newer method based on the number of argyrophilic staining fibers present in the reticulum or supporting tissue. They conclude the degree of malignancy is inversely proportional to the number of fibers present. That is, the less fibrin the more malignant is the tumor.

The pigment, a true melanin, is present in a variable amount. It is no index of the degree of malignancy. Its presence is believed an incidental metabolic activity of the neurogenic tumor cells which become dopaoxidase positive demonstrating a reversal to their embryonic character.

Callender and Wilder[4] in 1939 reported 124 or 49 per cent of 253 patients died from metastases, the postoperative duration varying from two days to fourteen years. Camp's series[5] reported in 1943 indicate a mortality rate varying from 12 per cent in the spindle cell subtype A to 66 per cent in the fascicular type and 50 per cent in the epithelioid type.

Three cases taken from the University Hospital file, enucleated within the last year, illustrate a different clinical picture in each instance.

Case 1.—A white woman, sixty-five years of age, was first seen at the University Hospital out-patient clinic on June 5, 1945, with a main complaint of gradual loss of vision in the right eye over a period of six months. The patient stated that she first noticed only a clouding in the temporal field of the right eye. However, this defect became more extensive and her vision less acute, until she was unable to see objects with her right eye. At no time had the patient noted any discomfort in her right eye. She denied ever having injured her eye or having had any previous eye disease. The history by systems and the general examination reported by the medical department revealed nothing of significance. The eye examination was as follows: vision in the right eye was limited to seeing light and motion; in the left eye it was 20/25 with a correcting lens. The anterior segment and adnexa revealed no abnormalities. The pupillary light reflex was intact. The intra-ocular tension is normal. Funduscopic examination revealed in the right eye a large bullous detachment involving the inferior half and part of the upper nasal quadrant of the retina. Peripherally the detachment extended from the nine o'clock to the two o'clock position. There was a cleft between a larger nasal and a smaller temporal bullous formation. Free undulations of the detached retina floating high in the vitreous were present as well as several areas of cystoid degeneration. The retinal vessels appeared dark. No hole in the retina could be seen. The disc and macula could not be visualized, their view being obstructed by the detached retina. Transillumination of the right eye although suggestive of a dark zone was not conclusive. In the left eye there was an incipient cataract. The fundus was entirely normal except for moderate arteriosclerosis.

The patient was admitted to the eye service on June 5, 1945, with a tentative diagnosis of retinal detachment of the right eye with probable intra-ocular tumor and incipient cataract of the left eye. The patient was ordered to have absolute bed rest, occlusion of both eyes, and atropine into the right eye daily. Daily examination revealed no change in the position of the detachment and at no time could a hole be seen. The intra-ocular tension by the Schiotz-Gradle tonometer was found to remain within normal limits. On June 19, 1945, the subretinal fluid was drained by subconjunctival scleral puncture. Two drainage points were created approximately 10 mm. behind the limbus, one in the four o'clock meridian, and the other in the seven o'clock meridian. Later observation revealed the temporal bullous detachment to be flat but the larger nasal portion was undisturbed. On July 10 a second drainage point was created under the nasal bullous detachment which allowed the retina to settle down over a circumscribed elevated mass, seen in the posterior one-third of the globe. Now a diagnosis of intra-ocular tumor was established and the eye enucleated on July 17, 1945. The pathologist reported the tumor a spindle cell subtype B malignant melanoma. The enucleation was followed up with irradiation to the orbit. Fifteen-hundred roentgen units in air to each of two areas were given over a period of two weeks, plus eight-hundred milligram hours of radium emanation on August 23, 1945. Repeated drainage of the subretinal fluid seemed to be an indication for irradiation; some tumor cells may easily have been transferred into the orbital tissues. This patient to date has shown no evidence of recurrence or metastases.

The problem of differentiating a serous detachment and one complicated by a tumor is demonstrated. Free undulations of the detached retina, absence of pigment dust in the media, and absence of any toxic signs pointed to a diagnosis of uncomplicated retinal detachment.

The value of irradiation in the treatment of malignant melanomas was reviewed by Burch and

Camp[1] in 1943. They conclude from their experience that irradiation therapy in malignant melanomas for the purpose of arresting growth, preventing metastasis or prolonging life, is definitely valueless; but indicate that the value of irradiation after enucleation, when given for the purpose of preventing recurrence or extension, is unsettled.

Case 2.—A white man, forty-two years old, first came to the University out-patient clinic on May 7, 1945, complaining of loss of vision in the left eye sixteen months prior to the above date and a painful eye of three weeks duration. The patient stated that while he was chopping wood in February, 1944, he was hit on the left side of his forehead by a piece of wood. According to the history this was a minor injury. The eye was not hit directly but immediately following this accident he noticed some blurring of vision in the left eye and from then on his sight gradually failed. There was no pain or discomfort and the patient did not seek any medical advice until his eye became painful three weeks prior to admission. The general history and physical examination were negative. Examination of the right eye, including visual acuity, intra-ocular tension and visual fields, was normal. The left eye had no light perception, was injected, with the cornea hazy, the anterior chamber shallow, and the pupil fixed. There were new vessel formations on the iris and no red reflex could be seen from the fundus due to opacity in the lens. The intra-ocular tension was 49 mm. mercury measured by the Schiotz-Gradle tonometer. Transillumination from below was suggestive of a darkened zone. The patient was admitted to the Hospital on May 7, 1945, with a tentative diagnosis of absolute glaucoma with a probable intra-ocular tumor in the left eye. On May 10, 1945, the left eye was enucleated. A histo-pathologic study revealed this to be an epithelioid cell malignant melanoma, which indicated a grave prognosis.

This patient was perfectly well when again seen April 9, 1946, but there was a small dark nodule under the conjunctiva which covers the orbital contents behind the upper lid. A biopsy of this nodule was reported by the pathologist to be chronic inflammatory tissue; no tumor cells could be demonstrated.

In review, this case was seen only after toxic signs developed. However, the loss of vision which ordinarily would direct a patient to seek medical advice began about sixteen months prior to the onset of secondary glaucoma. Monocular congestive glaucoma without signs of glaucoma in the opposite eye is presumptive evidence of intra-ocular tumor. If the fundus cannot be visualized the differential may become impossible.

Case 3.—A white man, forty-six years old, was admitted to the University Hospital on January 31, 1946. Early in 1939 he had noted some blurring of vision in the right eye. He was refracted on several occasions by several men at that time, but glasses failed to help him; instead his vision failed rapidly and there seemed to be fog in front of the right eye. His vision dropped to discerning fingers only at two feet.

For an interval of three years, this man lived and worked in the state of Michigan. He was seen there by several opthalmologists, one of whom told the man he had an intra-ocular tumor, but the patient failed to have an enucleation.

In the history he stated that in October, 1938, while working for a creosote company in Minneapolis he had a lot of tar strike him in his face. His vision began to fail several months later. The patient attributes the loss of vision to the injury. In fact, he placed a claim with the creosote company for the loss of sight in one eye. To determine the nature of the eye condition he was referred to Dr. Hansen as consultant for the insurance company. The definitive diagnosis was established, and the man was urged to have the eye removed.

On admission to the hospital the general physical examination was negative. The eye examination revealed vision in the right eye to be limited to distinguishing fingers at two feet; vision in the left eye was 20/20. The tension was normal in each eye. The pupils reacted. The left eye was essentially normal. In the fundus of the right eye was seen a lobulated mass, temporal to the disc, involving the macula, which was elevated some twelve diopters; the outline was sharp and the surrounding retina was elevated to a lesser degree; the slope to the normally adherent retina was steep. There was a black area around the tumor mass. The nerve head was normal. The eye was enucleated on January 31, 1946. The tumor in this eye was a mixed cell type malignant melanoma, giving a poor prognosis.

This last case illustrates a "so-called" ideal position of origin in the macula, yet there is a positive history of six years' duration. Noteworthy is the lack of toxic symptoms or complications during this entire period. The medicolegal aspect of intra-ocular tumors is demonstrated.

Comment

It may be emphasized that whenever an eye with a detachment, monocular congestive glaucoma, monocular iridocyclitis, disturbed central vision in one eye without an obvious explanation, or a phthisical globe is seen, one must make a particular effort to determine the presence or absence of an intra-ocular malignancy.

In early diagnosis and early enucleation lies our approach to influence the prognosis favorably.

(References on Page 1011)

INTRAPLEURAL PENICILLIN THERAPY IN TUBERCULOSIS AND MIXED INFECTION EMPYEMA

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WITH the advent of any new drug that is successful in the treatment of many infectious diseases, there is a tendency to treat every malady due to micro-organisms with the drug whether or not there is any scientific background for this procedure. This is particularly true of tuberculosis. It is doubtful whether any pathological entity has been subjected to so many types of treatment as has this disease.

When penicillin became available for general use, the medical staff at the Minnesota State Sanatorium felt that it might be a valuable adjunct in the treatment of tuberculous cases with mixed infections. The drug was not used to cure the patient's tuberculosis but with the idea of eliminating many other infections with which tuberculous individuals are frequently afflicted. In this way, it was thought that the tuberculous patient would have a better opportunity to cope with his tuberculosis.

One of the most distressing complications of pulmonary tuberculosis is empyema. It is a fairly common complication of therapeutic pneumothorax especially when acute extensive pulmonary lesions are treated by this method and when many adhesions are present. It is also a common accompaniment of spontaneous pneumothorax.

In January, 1945, Roberts, Tubbs, and Bates[3] reported a number of patients with pleural and pulmonary suppurations treated with penicillin. A few of their empyema patients had tuberculous pleural effusions infected by secondary pyogenic organisms. These individuals were benefited by intrapleural penicillin therapy. Two patients with pyogenic empyema complicating pneumothorax were benefited by penicillin, Howlett and Lester[2] have reported. Bird, Busheuff and Dawson[1] reported in February, 1946, two patients with tuberculous empyema complicated by mixed infection who were treated successfully by a combination of intramuscular and intrapleural penicillin.

Beginning in August, 1944, all individuals developing empyema in this institution were given a course of intrapleural penicillin regardless of whether the complication was due to tuberculosis or to a mixed infection or to a combination of the two. In all, fourteen patients were treated in this manner. The procedure was as follows: the pus was aspirated from the pleural space and the space was washed with normal saline solution until the effluent returned clear. Fifty-thousand units of penicillin were left in the pleural space after each aspiration. This was carried out for ten consecutive days and the patient was given a rest period, usually until all soreness due to the needle punctures in the chest wall had disappeared. In the average case, this was usually from ten days to two weeks. The procedure was then repeated if further treatment was deemed necessary or advisable.

The case histories of five patients who had mixed infection empyemas are given below.

C. H. S., an Indian woman, aged twenty-seven, married, was admitted to the sanatorium October 2, 1942, with a moderately advanced pulmonary tuberculosis involving the upper lobe of the right lung. She had a left cervical adenitis in 1937, and a small left pleural effusion in 1942. A right pneumothorax was instituted on October 30, 1942. There was a dense pleural adhesion in the apex of the right lung which prevented a complete collapse of the right upper lobe. This adhesion was cut by intrapleural pneumonolysis June 8, 1944. Sputum examinations were usually positive from admission until February, 1944. Following the operation, an empyema developed on the right side which showed pyogenic organisms but no tubercle bacilli on culture. The patient was seriously ill. She was given a ten-day course of intrapleural penicillin therapy in August, 1944. This was repeated in two weeks. The pleural fluid became clear, then disappeared completely. There was considerable pleural thickening and she was developing an obliterative pleuritis. The pleural space remaining was filled with sterile gomenolized oil. There was a recurrence of the empyema under the oil in February, 1945. The pus and oil were aspirated and she was given another ten-day course of penicillin therapy and the empyema disappeared. This time the lung was allowed to re-expand. The patient was discharged from the sanatorium with consent on November 1, 1945, and has returned to the sanatorium for examination at regular intervals. All sputum examinations, including cultures, have been negative since February, 1944, and she has had no active symptoms of tuberculosis or other untoward symptoms since she was discharged.

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W. W. B., an Indian, aged nineteen, single, and without occupation, was admitted to the sanatorium April 12, 1943, with far advanced tuberculosis in the left lung and a moderate amount of infiltration in the middle third of the right lung. He had marked tuberculous involvement of the left cervical and axillary lymph nodes with many draining sinuses. A left pneumothorax was instituted on June 25, 1943. Fluid developed in the left pleural space in September, 1943, which was followed by a partial obliteration of the pleural space. The left pneumothorax was converted to oleothorax in March, 1944. There was marked improvement in his general condition until July, 1944. On July 12, 1944, he developed a pleuro-cutaneous fistula in the left cervical region through which he drained all the oil from his left pleural space. This was followed very shortly by a mixed infection empyema. Cultures showed staphylococci, streptococci, diplococci and acid fast bacilli. In October, 1944, he developed a large tuberculous abscess over the sternum which broke down and left an ulcer in this area about 8 by 7 centimeters. In October, 1944, he was given a ten-day course of intrapleural penicillin therapy and this was repeated in November and December. This treatment was repeated again in February and March, 1945. In May, 1945, he had a small quantity of fluid which was clear and showed no organisms on culture. An x-ray made in June, 1945, showed no fluid and almost complete re-expansion of the left lung. His sputum had been consistently positive from April until December, 1943. He had nine negative sputum tests between December 28, 1943 and October 5, 1944. His sputum became positive again when his left lung was about one-half re-expanded. He left the sanatorium against advice in June, 1945. He reports that his improvement has continued since leaving the sanatorium and that there has been no recurrence of the empyema.

G. G., a white man, aged forty-one, married and a theater manager by occupation, became ill with tuberculosis early in 1931 and received sanatorium treatment from April, 1931 to June, 1932. A left pneumothorax was done in June, 1931. Adhesions over the upper portion of the left upper lobe where he had a rather large cavity prevented a satisfactory collapse. Thoracoplasty was recommended but refused so the pneumothorax was converted to oleothorax in December, 1931. When he was discharged from the sanatorium in 1932, he was free from sputum and active symptoms of disease. He worked steadily as a theater manager from December, 1932, to July, 1943, when he had an acute respiratory infection and began to cough up oil. The oil was aspirated from the pleural space a few days later and a considerable quantity of pus was found under the oil. Cultures from the pus showed a mixed infection empyema and no tubercle bacilli. He was admitted to the sanatorium July 16, 1943, acutely ill. His x-ray examination showed evidence of left pyopneumothorax with a bronchial fistula and a lipoid pneumonia in the lower lobe of the right lung. After admission his left pleural space was aspirated weekly and irrigated with normal saline solution and a solution of Azochloromide. A specimen of fluid from the left pleural space, inoculated in a guinea pig on May 9, 1944, produced tuberculous lesions in the guinea pig. Cultures of fluid removed from the left pleural space on June 8, 1944, and on several occasions thereafter, proved to be negative for tubercle bacilli. This patient received intrapleural penicillin treatment for ten successive days in November, 1944 and February, 1945. The fluid became clear after the second period of treatment. He received another six doses of intrapleural penicillin on consecutive days in March, 1945. When the pleural fluid became clear the left lung began to re-expand. He was discharged from the sanatorium with consent July 7, 1945. He still has a pleural pocket on the left side from which 100 to 200 c.c. of clear fluid is aspirated at intervals from two to three weeks. His general condition is good, he is free from all symptoms of active tuberculous disease and he has been working full time for more than six months.

L. D., a white farmer, aged sixty, was admitted to the sanatorium, November 2, 1944. In April, 1943, he had an infection of his left great toe following an injury, which was treated with sulfonamides and the infection cleared up in two weeks. Shortly after this, he contracted a severe pain in his left chest and was told by his home physician that he had pneumonia. He also had had a severe attack of pneumonia fifteen years earlier. In June, 1943, he was told that he had a healed lung tuberculosis. The City Health Department of Minneapolis reported a positive sputum on October 16, 1944. When admitted to the sanatorium he was acutely ill, emaciated, and was coughing and raising large quantities of purulent sputum which was negative for tubercle bacilli but showed many other organisms. X-ray studies revealed a localized empyema in the posterior portion of the left chest with a bronchial fistula, and a fibroid tuberculous lesion in the upper portion of the right lung that was apparently healed. Numerous sputum examinations and cultures made at the sanatorium laboratory were negative for tubercle bacilli. The patient was given a series of intramuscular penicillin treatments immediately after admission to the sanatorium. His general condition improved but there was little change in his cough and expectoration. He was given a series of ten intrapleural penicillin treatments in January and February and a series of six treatments in March, 1945. His general condition improved remarkably and the amount of expectoration was greatly reduced. There was little change in the empyema pocket in the left chest but he was quite comfortable when he was aspirated every two weeks. The fluid when aspirated at two-week intervals was bloody but contained no pus. Due to the patient's age and the fact that he was comfortable when aspirated at two week intervals, he was allowed to return home under the care of his family physician. In a younger person it would have been advisable to obliterate the empyema pocket surgically.

C. G. N., a white single male, aged twenty-five, by occupation an embalmer, was first admitted to the sanatorium May 24, 1940, with a moderately advanced pulmonary tuberculosis involving the greater part of the upper lobe of the right lung. Pneumothorax was instituted on the right side May 27, 1940. He developed a large quantity of clear fluid in the right pleural space in June, 1940. Sputum on examination on May 30, 1940, was positive. He left the sanatorium against advice on October 19, 1941, but his pneumothorax was maintained by his family physician. He was re-admitted to the sanatorium April 1, 1943, as a far advanced case of active pulmonary tuberculosis. He had a moderate-sized tuberculous pleural effusion on the left side and an empyema on the right side on re-admission. The effusion on the left side cleared up on bed rest but there was no change in the empyema on the right. Cultures made from the pus of the right pleural space were positive for tubercle bacilli in December, 1942, and January, 1943. A sputum culture showed acid fast bacilli in February, 1943, and there was a positive sputum report from the sanatorium laboratory December 17, 1943. Since that time, his sputum examinations, including cultures, have been negative. Oleothorax was started January 26, 1944, but was abandoned. Cultures of the pleural fluid on November 8, 1944, showed Gram positive micro-organisms. In January, 1945, he was given a ten-day course of intrapleural penicillin therapy and another six-day course in February, 1945. At the end of the second period of treatment, the pleural fluid became clear and the quantity was greatly reduced. Before penicillin therapy was started, 150 to 200 c.c. of thick pus was aspirated from the chest each week. After the completion of his second period of penicillin therapy, about 50 c.c. of clear fluid was aspirated at four-week intervals. The right lung is re-expanding gradually and the pneumothorax pocket has almost disappeared. The patient was discharged from the sanatorium with consent on February 18, 1946, but returns for chest aspirations every four weeks. He had been on full exercise and doing part-time work for more than six months previous to his discharge. All cultures for tubercle bacilli were negative after the pleural fluid became clear.

The case histories of the three patients given below are typical of the group of nine cases of uncomplicated tuberculous empyemas treated by this method.

L. H., a white farmer, aged forty-three, had a skin lesion of the face and scalp in 1926 that was diagnosed as skin tuberculosis. He had a pulmonary hemorrhage in June, 1931, and was admitted to the sanatorium the first time on August 26, 1931. A left pneumothorax was instituted on March 31, 1933. He was discharged from the sanatorium with consent on May 28, 1936, and his pneumothorax was maintained by his home physician. He was re-admitted August 31, 1944, and examination showed a left pyopneumothorax and scattered fibroid tuberculosis in the upper and middle third of the right lung and multiple skin lesions over the face and scalp. Pus was aspirated from the left pleural space at weekly intervals which showed acid fast bacilli on microscopic examination and cultures. Cultures for organisms other than tubercle bacilli proved to be negative. In December, 1944, he received intrapleural penicillin treatment for ten days with no appreciable improvement. He had another course of intrapleural treatment on the left side for six successive days in January, 1945. This was repeated in March and in August, 1945. He developed an infection in the chest wall following the early treatments which interfered with and delayed the last two series of treatments. It was quite evident that penicillin therapy was not causing any change in this man's pleural infection or general condition, so closed catheter drainage was instituted in the left pleural space in August, 1945. Following this, the patient's general condition showed moderate improvement. He was transferred to another sanatorium in January, 1946, to continue treatment.

L. O., a farmer, unmarried, aged forty, was admitted to the sanatorium April 1, 1944. He had had an acute respiratory infection in February, 1944, with chills, fever, cough, expectoration and hemoptysis. After a month of bed rest his acute symptoms subsided but he continued to raise sputum which was positive for tubercle bacilli. His admission examination revealed a moderately extensive infiltration in the middle third of the right lung. The left side showed a rather dense infiltration in the upper three-fourths of the lung with a large cavity in the first interspace and under the second rib. Pneumothorax was instituted on the left side on April 4, 1944, and an effusion developed in October, 1944, which became purulent in a short time. Cultures made from the fluid showed tubercle bacilli but no other organisms. The fluid was aspirated from the left chest at weekly intervals from October, 1944, until February, 1945. The pus became somewhat thinner just with aspirating and washing the pleural space with salt solution. Starting on February 13, 1945, he was given intrapleural penicillin treatment in the left pleural space on ten successive days. As there was no change in the pleural fluid or the patient's condition, the treatment was not repeated. However, after a few more months of aspirating, the fluid in the pleural space became clear. The lung partly re-expanded and a successful three-stage thoracoplasty was performed in December, 1945, and January, 1946.

M. B., a white school girl of sixteen, was admitted to the sanatorium on October 25, 1943. This patient's tuberculosis began with an acute respiratory infection with fever, left-sided pleurisy, cough and expectoration one month before admission. Her admission examination showed slight infiltration in the right upper lobe and a dense infiltration in the upper half of the left lung with cavity formation. A left pneumothorax was instituted November 8, 1943, which resulted in a fairly good collapse of the left lung. A small effusion developed at once and this increased gradually. There was also some increase in the involvement in the right upper lobe. The fluid became purulent in August, 1944. Cultures of the fluid showed acid fast bacilli but no other micro-organisms. The fluid was aspirated from the left pleural space at weekly intervals from the time it developed until February, 1945. At that time, the patient was given a ten-day course of treatment with intrapleural penicillin. As there was no apparent change in the fluid or the patient's condition, the treatment was not repeated. The weekly aspirations were continued and by September, 1945, the fluid was practically clear and the lung had almost entirely re-expanded. A successful three-stage thoracoplasty collapse was done in December, 1945, and January, 1946.

In addition to the three cases of uncomplicated tuberculous empyema reported above, six similar patients were given one or more ten-day courses of intrapleural penicillin therapy. None of them showed any appreciable improvement. In a few, it was thought that the fluid was somewhat thinner at the end of the treatment and in a number of these, an attempt was being made to re-expand the collapsed lung. Consequently, enough air was aspirated at the end of each treatment to leave a rather low intrapleural pressure. Some re-expansion occurred in all of these patients. Some of these were fit subjects for thoracoplasty later on and were able to have their pleural spaces obliterated more successfully and with less surgery than were those who were not treated in this manner.

There were no individuals with proved secondary organisms in their pleural fluid who were not benefited by intrapleural penicillin therapy when the treatment was carried out thoroughly. Conversely, no specific benefit could be attributed to this therapy in cases of empyema showing only tubercle bacilli in the pleural fluid.

Conclusions

1. All cases of empyema occurring in tuberculous individuals should be studied for infections with secondary pyogenic organisms as well as for tubercle bacilli.
2. When secondary pyogenic organisms are found in these cases, the patient should have the benefit of intrapleural penicillin therapy. Whether it should be combined with intramuscular penicillin treatment at the same time should depend on the individual case.
3. It is a mistake to expect any specific benefit from penicillin therapy in cases of uncomplicated tuberculous empyema.

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INTRA-OCULAR MALIGNANT MELANOMAS OF THE CHOROID

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DEVELOPMENT OF A PROGRAM OF HEALTH SERVICE IN INDUSTRY

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MODERN living depends basically on efficient and co-ordinated industrial production. In times like these, if America is to keep her position of world leadership, every effort must be made to maintain the health and productive efficiency of her workers at a high level. Therefore, from the medical point of view, good occupational practice is a prerequisite to the well-being of our country as a whole, and in particular of that huge proportion of our population which earns a living in our mechanical and manufacturing world.

In general terms, the objectives of industrial health may be said to include the protection of health, the improvement of personal industrial efficiency and the prolongation of life of our workers. These objectives present today as never before a real challenge because if workers are to live healthfully and efficiently in our modern world of machines, the ever-new health problems associated with changing industrial processes must be met—otherwise we will become victims of our own industrial development.

Industrial medicine in America must remain vigorous and fulfill its function so that we in this great land will reap undreamed advantages to be derived from industrial applications of scientific discoveries.

Rise and Growth of Industrial Health

Influence of Workmen's Compensation Laws.—The health and welfare of American workers as we know this concept today, has not always been on the high level. Medical interest in the field of occupation has existed for a long time. Yet, only occasional efforts at improvement took place in this country until about thirty-five years ago, when new concepts regarding responsibility for health conservation among industrial workers began to exert very profound influences upon industry and the medical profession. Prior to the days of compensation "loss-recovery" from industrial injuries was determined on the principles of the old English common law. Not only was litigation lengthy and expensive, but recovery was doubtful, and returns frequently so small that the disabled worker remained a burden on society. To remedy this situation workmen's compensation laws were enacted. Once a monetary value was placed on disability arising out of or in the course of employment it did not take industry long to realize that industrial accidents and occupational disorders were to a very considerable degree preventable. Furthermore, it was repeatedly demonstrated that health maintenance and proper working environment applied to the worker had a very definite favorable effect on the rate of industrial production. It was from such considerations that our modern interest in industrial health fundamentally developed.

It is essential therefore, to point out that industry's earliest medical need was for competent surgical treatment of injuries actually or likely to become compensable. For most employers this obligation remained for a long time the most important and often the only motive for providing medical service. Consequently, for most physicians, this relationship provided the sole point of contact with industry and industrial health methods. As time went on, many factors tended to modify this traditional concept of medicine's usefulness to industry, and society through occupational disease legislation demanded that industry protect its employes, not alone against accidents, but also against harmful health experiences associated with work as a cause. Experience in the safety movement turned the attention of employers to prevention as a cardinal principle for lowering the incidence of disability suffered by workers, whether through accidents or disease, industrially induced or otherwise. This attitude was significant as it implied a gradual and steady reduction in the amount of remedial service required of the industrial surgeon. As industry grew to better appreciate medicine, the physician in industry was asked to provide more and better preventive medicine. Society's interest on behalf of its own welfare and through the force of workmen's compensation laws demonstrated conclusively through the years that the health and wel-

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fare of workers is a primary asset in our scheme of living. Dr. Victor G. Heiser, Medical Consultant of the National Association of Manufacturers recently stated: "If our economy is going to provide us all the goods our people need, eventually pay our bills and bind up the war wounds of most of the western world, the human production capacity must be watched over as never before."

The Influence of the Public Health Movement.—In tracing the rise and growth of industrial health, it is significant to appreciate that the rapid development of public health in America since 1900 contributed vigor and strength to the demand for better health in industry. Good health is not just a gift of fate, but a positive condition to be achieved through careful planning. General James S. Simmons, Chief, Preventive Medicine Service, Office of the Surgeon General, United States Army, in a paper read before the Sixth Annual Congress on Industrial Health, on February 15, 1944, stated: "We were able to develop our present great military force with such rapidity and to mobilize the industrial workers to support it only because we were armed with effective methods and facilities for the prevention of disease." At this time and in recognition of the organized industrial health effort made by the Services during the war, it is pointed out that as men of military age were withdrawn from industry, they were replaced by women, older men, younger men and the handicapped. Each of these groups presented new and different industrial health problems. The rapid transition which these people made and the efficiency with which they produced reflects great honor and credit upon themselves and was certainly in keeping with the highest traditions of industrial America. Unremitting attention was at all times given to their associated health problems. In part, this was what General Simmons meant when he stated that we were armed with effective means and facilities for the prevention of disease. This accomplishment stems from the American concept of good public health.

During the war, thousands of service men and women were trained in the various phases of preventive medicine. Some of these soldiers are now returning. With a background of global travel and first hand experience with standards of health far below ours, these men and women will from this time on influence our way of thinking in matters of general health and also industrial health. In this respect, General Simmons has stated: "The nation, in consequence, faces a great opportunity, if it will take it, to continue the health education of these individuals and thereby place the public health of the United States on a broader and firmer basis than has been achieved by any nation in history." He goes on to state, "A definite responsibility falls on our system of medical education. There must be incorporated into its various branches a greater appreciation of the value and need of the preventive aspect of medicine. Our schools of public health must train an increasing number in the various skills of disease prevention and public health administration if the nation is to face the future with assurance."

The Influence of Leadership Supplied by Organized Medicine.—In this story of the rise and growth of industrial health there have been, over the years, a number of agencies in the American Medical Association which have made useful contributions in the field of industrial health. Interest has not in any sense been limited to discussions of clinical medicine and surgery. It has extended broadly into the related fields of medical economics, public relations and social legislation. One of the earliest examples designed to create a better professional understanding of the social and medical values in industrial health was an investigation of workmen's compensation by the Judicial Council in 1915. The review of what at that time was still largely a European phenomenon was of such searching character as to be reflected in almost all later studies, and has induced organized medicine to keep closely in touch with a movement designed to play such an important part in professional relationships. Another development of this same early period was the appointment of a Committee on Industrial Sanitation by the Section on Preventive Medicine and Public Health. This Committee very promptly reported that the great mass of workmen had been denied the enjoyment of healthful living and working conditions and predicted a large field of opportunity open to the physician in the industrial field. The scope of activity in which physicians could properly engage was outlined by this Committee and included substantially all the functions now considered applicable in present-day industrial practice.

Other departments and divisions of the American Medical Association have long records of sustained interest in industrial health. This growing observation is reflected in the increased amount of space assigned to the subject in the publications of the Association. The most recent development is a special journal known as *Occupational Medicine.* The Chief Editor is Dr. William A. Sawyer of Rochester, New York. This new publication is designed to record progress in the field of prevention and treatment of disease conditions that occur in persons engaged in every type of occupation. The general practitioner, the specialist, the part-time plant physician, the industrial nurse, and the full-time medical administrator, may expect to find it of timely interest and practical value.

Industrial medicine has profited by every advancement general medicine has made in the direction of self-improvement, by controlled undergraduate and graduate education as well as through the maintenance of adequate standards of hospital training, licensure and specialist certification. These, to be sure, represent intent to improve medical care for the whole population, but the industrial worker it must be realized, comprises a large segment of our entire population. Reviewing the records, there have been studies in rehabilitation and re-employment of the handicapped, in problems of ventilation, air conditioning, vision testing, illumination, noise, fatigue, women in industry, overcrowding, mental and personal hygiene, and a host of others. As time went on, it became more and more apparent that a single agency in the structure of the American Medical Association was essential to guide medical leadership in the rapidly developing field of industrial medicine. At the Atlantic City session of the House of Delegates in 1937, authorization was given to the Board of Trustees of the Association to proceed with the organization of a Council on Industrial Health as a standing committee of the Board of Trustees. This Council held its first meeting in December, 1937. The plans of the Council included an investigation of present activities in the field of industrial health. The objective was to outline problems of health in industry and to indicate what was being done about them. The first Congress on Industrial Health was held at the Palmer House, Chicago, January 9 and 10, 1939. This meeting revealed the complex nature of some of the problems as well as the vast extent of the field itself. A fact which emerged was one which had previously impressed industrial health workers, namely, that conditions of work and their effect on health in relation to every kind of human activity would eventually come into the circuit of medical study and research.

Early in the development of the Council on Industrial Health, a policy was adopted regarding the relationship to the constituent state medical associations and the component county medical societies which make up the American Medical Association. A policy was adopted in the following terms:

"Contact should be made with the several state medical societies, urging them to create committees on industrial health which will proceed at once to study the problems in this field in their respective communities. The organization of committees should be extended as far as practicable to the county medical societies. These committees should be urged to investigate the present activities within their states of the several agencies interested in industrial health, as well as the proposals for industrial health legislation which are being presented to various legislatures. Educational programs should also be sponsored under the auspices of these committees."

This method of taking advantage of the structure of organized medicine has yielded interesting results. Earlier investigation had demontrated that while a fair percentage of states had formed committees to deal with limited aspects of industrial health, centralized responsibility was largely absent. Functions were distributed through several committees all of whom might act independently on economic, ethical or clinical matters. The evident need for co-ordination of activity appealed to the majority of state medical associations. In the same fashion, the state committees urged the development of co-operating committees in the industrial counties, all in the hope that the objectives of industrial health would be more rapidly realized.

As the work of the Council progressed, it soon became apparent to many that the relationship between medicine and industry as sponsored by organized medicine was destined to play an important and far-reaching role in the industrial defense program so essential to a total war effort. The outbreak of hostilities accentuated the demands on industrial medicine to such an extent that industrial health became almost overnight a major problem in the winning of the war. The stabilizing influence of the Council during the turbulent years of war added vigor and strength to the industrial medical phase of the national victory program. For what now lies ahead, men of affairs in both medicine and industry have a reserve of experience, faith and courage, because industrial medicine has achieved the position of keystone in the American arch of human progress.

The Industrial Health Program

Let us now look at a program and examine it as to value to employer, value to employee, scope and essentials and operational trends.

The Council on Industrial Health has gone on record to the effect that:

Value to Employer.—As a rule an employer adopts a plant medical program containing functions beyond his legal obligation because he is convinced that such practices represent an improvement in the conduct of his business. Therefore a physician who is asked to supply these services should make it a point to comprehend the nature of the business with which he is to be associated and to understand how and why he can be of value to it. The essential purpose of any industry is the development of goods and services of such quality and price as to permit the widest possible distribution. Procedures calculated to accomplish this purpose are well defined by custom and long experience in many industries. Elsewhere they may be exceedingly complicated. Often extensive consumer research is necessary. as well as designing of an engineering nature. Markets must be developed. sustained and augmented by advertising and efficient distribution. Competition must be met, restrictive legislation conformed with, and provision made for taxation and finance. Facilities for the conduct of the business must be provided with proper equipment so arranged as to promote efficient production. Workmen must be employed and trained for specific jobs under competent supervision. Sound business management requires that trained manpower be conserved, kept in good physical condition and maintained steadily at gainful employment. It is through the successful accomplishment of this maintenance function that the physician in industry can make himself most helpful and not infrequently indispensable.

Value to Employe.—The first objective of all industrial health activity is to promote the physical welfare of every worker. Certainly the interests of employer and employe are nearly identical under an arrangement which tends to reduce loss of working time because of sickness or injury. Individual workers stand to gain substantially in every instance in which the industrial medical service is competently and fairly administered. The advantage to the worker rests not solely on improved earning power through steadier employment but by proper placement in work fitted to his physical and temperamental makeup.

Scope of Industrial Health.—These values, which have been assigned by employer and employee alike, are responsible for the growth of interest in industrial health and for increasing demands on physicians to supply medical services to industry. This interest has been productive of much good as well as of some misdirection and abuse. The medical profession has as a result developed a point of view which has the intent of defining the proper scope of industrial medical activity and of unqualifiedly condemning conditions which make it impossible to maintain adequate standards of medical performance.

In keeping with this broad opinion, the Council on Industrial Health believes that a properly administered industrial health program should:

1. Prevent disease or injury in industry by the establishment of proper control over industrial environment.
2. Promote restoration to health and earning capacity as promptly as possible after industrial injury or disease.
3. Conserve the health of workmen through physical supervision and education.

These are expressions concerning scope and not of specific functions. On the acceptance of these principles rests the justification for the development of industrial health as a special field of medical interest and distinct from private practice and through which at the same time the aims of industrial and private practice are reconciled.

Essential of an Industrial Health Service.—

1. A competent physician who takes genuine interest in applying the principles of preventive

medicine and hygiene to employed groups and who is willing to devote regular hours to such service in the working environment.

2. Industrial nurses with proper preparation, acting under the physician's immediate supervision or under standing orders developed by him or by the committee on industrial health of the county medical society.

3. Industrial hygiene service directed at improvement of working environment and control of all unhealthful exposures, to be provided by physicians and others with guidance and assistance from the specialized personnel in state and local bureaus of industrial hygiene.

4. A health program which should include:

(a) Prompt and dependable first aid, emergency and subsequent medical and surgical care for all industrially induced disability.

(b) Health conservation of employes through physical supervision and health education.

(c) Close correlation with family physicians and other community health agencies for early and proper management of non-occupational sickness and injury.

(d) Good records of all causes of absence from work as a guide to the establishment of preventive measures.

Operational Trends.—Since the beginning, much has been accomplished in the matter of crystallizing the concept of the health needs in industry, but from this point on, the medical profession must continue to furnish leadership and demonstrate beyond a doubt to both management and labor that in our postwar years a health service in industry can be operated without prejudice. In this connection, it is worthy of note that many business organizations of five hundred or more workers have found medical supervision over employes, materials, processes, and working conditions, to be a practical necessity. This trend gains strength as industrialists learn by education and example that maintaining trained manpower at gainful employment uninterrupted as far as possible by disability, injury or illness, is good business. Demands for an industrial medical service come sooner from large firms able to individually support adequate medical facilities. A more important demand should come from small manufacturing units and other commercial enterprises, once a means is found for providing an adequate service which they can with advantage support. Referring once more to a recent speech by Dr. Victor G. Heiser, he stated to the effect that the small size of many plants is no longer a valid obstacle to effective industrial health programs. Small businesses in a number of manufacturing areas have clubbed together in an integrated service which supplies care on a par with that given by some larger plants with their own medical departments and at the same time with less cost per employe. Surveys by the National Association of Manufacturers have shown almost unanimous favor for industrial health programs as a proved means of production economies and good labor-management relationships.

Relationships

In bringing this paper to a close it is proper to mention that relationships bring to the industrial scene, the industrial physician, industrial nurses, industrial hygienists, chemists, medical specialists, medical administrators, medical statisticians, safety engineers, industrial hygiene engineers, insurance men, legislators, courts, commissions, boards and attorneys, all of whom are vitally interested in the same objective—namely, health promotion and health supervision in industry. Industrial health is therefore an all-inclusive term. Protection of health, prolongation of life of workers, prevention of disability and improvement of personal industrial efficiency, supply the true meaning of the term industrial health. The physician and nurse should be the central figure in this picture.

How does this discussion provide an insight into the professional growth of the nurse in industry? It is only important if there is validity in the assumption that improvements occurring in the medical administration of industrial health can hardly fail to exert a beneficial effect on all other agencies associated with it. Certainly, nothing should be of greater importance to a nurse than that she associate herself with a movement which under capable medical leadership has assumed high rank in the field of preventive medicine and health maintenance. Equally certain is it that the characteristic associations and professional aspirations which have always existed between medicine and nursing are as important in industry as out of it, and that the physician

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CLINICAL-PATHOLOGICAL CONFERENCES

DIFFUSE MYXOMA OF LOWER EXTREMITY WITH ELEPHANTIASIS

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Dr. William Hayford: This case, 0-46-428, is that of a twenty-five-year-old woman who was admitted to Minneapolis General Hospital on May 15, 1946. She was unable to walk because of a painful swollen left leg. She had had a number of small skin tumors since childhood. The left leg began to increase in size during early childhood. At the age of fifteen years because of the swelling of the left lower extremity she was forced to walk on crutches. She gradually spent more and more time in bed. The left leg and thigh became larger and heavier. She had been confined to bed since November, 1944. She was admitted to a local hospital in April 1946. On April 9, 1946, a needle biopsy of the leg was done. Bleeding was brisk and her leg rapidly increased in size. Her hemoglobin dropped to 36 per cent. She was given over a period of three days, 2,000 c.c. of blood and 500 c.c. of plasma. The pathological diagnosis from the needle biopsy was diffuse hemangiomatosis. A biopsy of one of the small skin tumors resulted in the diagnosis of von Recklinghausen's disease.

On admission to Minneapolis General Hospital, she was poorly nourished and in no acute distress. The skin of the body showed a number of small, soft, cystic tumor masses that measured from 1 to 8 cm. in size. There was a marked lateral deviation of the right eye. She was blind in the right eye. The right optic disk was white in color. There was marked left scoliosis of the spinal column in the thoracic region. Blood pressure was 168/126. The heart appeared to be somewhat enlarged to the left. The heart rate was 140 per minute. The entire lower left extremity showed marked elephantiasis (Fig. 1). The five toes remained as the only external evidence of a foot. The left extremity was approximately eight inches longer than the right. There was no pulsation present. The skin over the extremity was tense and tender. She was anesthetized on May 15, 1946, and 2,700 c.c. of old blood was aspirated from the upper third of the leg on its anterior aspect. She was given a transfusion of 500 c.c. of blood. False motion of the left hip and ankle joint could be felt while under anesthesia. An elastic bandage was applied to the extremity. X-ray studies showed marked atrophy of the tarsal bones of the foot, a dislocation of the hip joint and elongation of the left tibia and fibula. Her venous pressure was 14 cm. of citrate. A circulation time of 15 seconds was obtained with fluorescein from arm to lips. Plasma proteins were normal. The blood volume was estimated with congo red solution to be 5,346 c.c. Bleeding and clotting times were normal. Prothrombin time was 25.1 seconds as compared to a control of 19.7 seconds. She was given another transfusion of 500 c.c. of blood and her hemoglobin rose to 94 per cent (Sahli). Leukocyte count was 9,000 with 78 per cent neutrophiles. Urinalysis showed nothing of note. Serology was negative. An electrocardiogram showed sinus tachycardia and left axis deviation. Fundoscopic examination showed marked arterial narrowing of the vessels of her left eye and sheathing of the veins with pallor of the disc. On May 27, 1946, a high thigh amputation of the left extremity was done by Dr. John F. Pohl. It was recognized at time of surgery that the line of amputation was through neoplastic tissue. In raising the left leg for draping prior to surgery there was a marked rise in the pulse rate and the patient's entire cutaneous surface developed a blotchy cyanosis thought to be due to draining of the blood from the extremity. A considerable blood loss during the operation was offset by the administration of 3,400 c.c. of whole blood during the operation. She made an uneventful postoperative recovery. The skin was completely healed after three weeks. She was discharged on the thirty-seventh postoperative day.

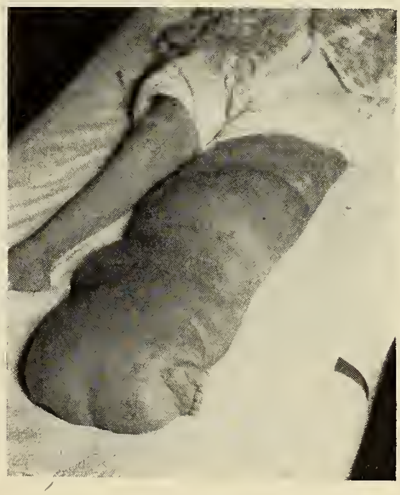

Fig. 1. Marked enlargement of lower extremity.

Dr. A. J. Hertzog: The amputated extremety (Fig. 2) weighed 60.5 pounds. It had been amputated 17cm.

From the Minneapolis General Hospital, A. T. Hertzog, M.D., Pathologist.

above the knee joint. The outline of the foot had been destroyed by a concave enlargement of the plantar surface. The toes remained. The extremity had a boggy consistency. On sectioning the extremity, the greater part of the enlargement was due to grayish white, firm, gelatinous, slimy, myxomatous tissue. The soft tissues contained several large cystic cavities in the midportion of the leg. The largest of these measured 24 by 13 cm. and was filled with old clotted blood. Several small cavities measured up to 9 cm. and were filled with straw-colored serum. The knee joint showed considerable destruction of its articular surfaces. The joint had been invaded by the myxomatous tissue. The head of the talus showed partial destruction. The tarsal bones were largely destroyed. The soft tissues, including the sciatic nerve, at the line of amputation were involved by the neoplastic tissue. The femoral vein was thrombosed near the line of amputation. The tibia and fibula appeared preserved. Does any one wish to make a diagnosis before we show the microscopic slides?

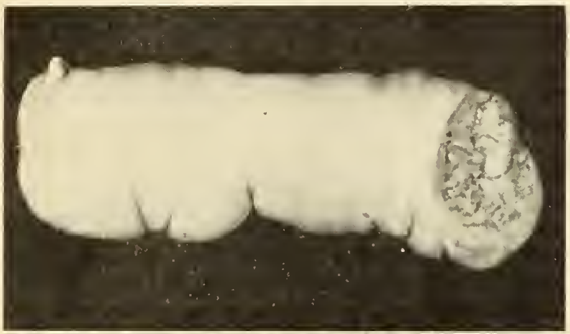

Fig. 2 *(above)*. Amputated lower extremity.

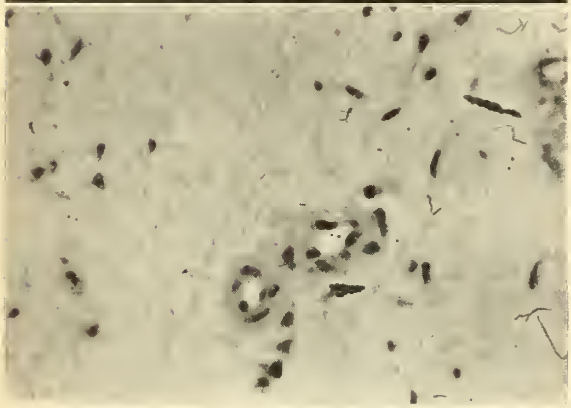

Fig. 3 *(below)*. Photomicrograph showing stellate cells and loose myxomatous stroma.

Interns and Students: Diffuse hemangiomatosis, elephantiasis, fibroma molluscum, sarcoma, or myxosarcoma.

Dr. Julian Sether: Microscopic study of the tumor showed it to be composed of small stellate cells with a large amount of loose myxomatous stroma (Fig. 3). Mitotic figures were not seen. Sections of the sciatic nerve showed it to be surrounded by neoplastic tissue. The tumor extended outward to involve the deeper part of the corium of the skin. Sections of the bone marrow of the tibia showed no evidence of neoplastic involvment. The pathological diagnosis was diffuse myxoma of the lower left extremity with marked elephantiasis.

Dr. Hertzog: This case is largely one of a medical curiosity. It does bring up several diagnostic possibilities and physiological problems. This was a small woman weighing not more than 115 pounds and the amputated extremity weighed 60.5 pounds. Hence over 50 per cent of the body weight was removed at surgery. Her blood volume prior to surgery was estimated to be 5,346 c.c. The loss of blood during surgery and as a result of the amputation of her extremity was replaced by 3,400 c.c. of blood given by transfusions at the time of the operation. This patient received a total of 6,400 c.c. of blood during a period of forty-seven days. There was probably a complete replacement of her blood volume. Blood banks are a necessity for this type of surgery. The marked vascularity of the tumor was shown by its rapid increase in size following a needle biopsy elsewhere. Needle biopsies are always a hazardous procedure in vascular tumors. The vascularity influenced the diagnosis of hemangioma. We never had an opportunity to confirm the diagnosis of neurofibromatosis. It will be of interest to see how much invasion and growth occurs in the vicinity of the hip above the amputated stump. Histologically this is a benign tumor. This type of tissue is extremely resistant to all forms of irradiation. Myxomatous tissue normally occurs in the body only in the umbilical cord. It is a modified form of connective tissue. It is a frequent occurrence as a part or predominating structure of mesodermal tumors. Grossly these tumors can usually be readily recognized by their slimy mucoid translucent appearance. Myxomas may be benign or malignant. They consist of stellate or spindle shaped cells with long processes and abundant intercellular substance containing mucin. The mucin is precipitated in threads by tissue fixatives. Mitotic figures, irregularity in the size and shape of the cells with abundant cytoplasm indicate malignancy. Even the histologic benign myxomas are seldom completely encapsulated. This makes them difficult to remove completely, and recurrences are common. Foci of hemorrhage necrosis, and cyst formation are frequent. Myxomas are prone to occur in subcutaneous, subserous, and intermuscular tissues. In neurofibromatosis some of the tumors are often composed partly of myxomatous tissue. However, we have nothing in this case to show that this marked elephantiasis of the leg is a part of the picture of von Recklinghausen's disease, in spite of her multiple skin tumors. We know that occasionally the lesions of the nerves may be extensive and associated with a diffuse overgrowth of tissue in some local area such as the extremities or the scalp, the so-called elephantiasis neuromatosa.

Student: How can one exclude Milroy's edema in this case?

Dr. Hertzog: This brings up the whole question of chronic lymphedema. Progressive enlargement of one or more extremities or of the scrotum or vulva with thickening and induration of the skin has been known since ancient times under the term, "elephantiasis." Most of these cases are due to chronic obstruction of the lymphatic vessels. Filaria bancrofti is a common and well recognized cause of tropical elephantiasis. Milroy described a congenital type of hereditary lymphedema of the lower extremity that never extends above Poupart's ligament. It may be called chronic hereditary edema. Biopsies in these cases have shown an increase of connective tissue and foci of lymphocytes. Large collections of free fluid may be found in the subcutaneous tissue. In this case, there was no familial history of edema, the tumor invaded the left side of the pelvis, and the gross and microscopic picture was that of a myxoma. This whole subject of chronic lymphedema is a very involved one and some prefer to use the term elephantiasis to cover the whole group, as many objections can be raised against blockage of the lymphatics as an explanation for the complete picture.

Pathological Diagnosis: Diffuse myxoma of left lower extremity with marked elephantiasis.

NORMAL APPENDICES IN 1,000 APPENDECTOMIES

HAROLD H. JOFFE, M.D., and ARTHUR H. WELLS, M.D.
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The prime purposes of this review of 1,000 consecutive cases diagnosed and operated upon for appendicitis over a period of three and one-half years are (1) a statistical review to evaluate the importance of normal appendices in this group, (2) the demonstration of pitfalls in the clinical manifestations of appendicitis, (3) a comparison of the diagnostic abilities of various surgeons under the same system of grading, and (4) an estimation of the percentage of normal appendices which should occur in a good surgical practice.

There is probably no other common diagnosis which is wrong more often than that of appendicitis. Aschoff[1] found 35 per cent normal appendices in his series of 847 cases of primary appendectomy. Sappington and Horneff[10] found 60.3 per cent normal appendices in 937 cases, and Mason et al.[7] found 18.6 per cent normal appendices in 1,000 appendectomies. In scientific reports[5,6,8] of extensive series of cases of appendectomies for appendicitis, it is the accepted custom for surgeons to omit completely any reference to normal appendices. This state of presumptive infallability undoubtedly exists in surgeons' hospital records throughout the country.

The conditions erroneously diagnosed as appendicitis are legion. Among the many diseases found at the time of laparotomy for supposedly appendiceal disease are ruptured lutein or follicular cyst of the ovary, cholecystitis or cholelithiasis, perforated peptic ulcer, inflamed Meckel's and other diverticula, intestinal obstruction, torsion or inflammation of the uterine adnexa, ruptured extra-uterine pregnancy, mesenteric vascular occlusion, torsion of pelvic tumor, cyst or fibroid, regional ileitis and renal or ureteral calculus. Although surgical conditions erroneously diagnosed as appendicitis are more frequently encountered, those of a medical nature such as psychoneuroses, pyelitis, nephritis, pneumonia, tabes dorsalis, rheumatic fever, diabetes, purpura hemorrhagica abdominalis, lead poisoning, acute infectious mononucleosis, gastritis, enteritis, colitis, mesenteric adenitis, malaria, and infectious hepatitis are not so infrequent as to be overlooked.

Anesthetists have been unjustly blamed for a severe postanesthetic pneumonia where the physician failed to obtain a careful history and do a thorough physical examination of the chest pre-operatively. A careless adoption of the good surgical philosophy that it is better to remove a normal appendix than to face the terror of perforation and peritonitis can become a scapegoat and the reflection of the surgeon's conscience. We fully realize that there is no greater diagnostic problem in the field of surgery, but cannot approve of laparotomy without a thorough study of the patient.

The microscopic examination has the final word and at present affords as near an accurate diagnosis as is possible. There can be no inflammatory reaction without easily recognizable histologic changes. The accuracy of a correct histologic diagnosis is aided by certain pathogenetic aspects of appendicitis. The fact that the inflammatory process spreads in the form of a wedge from the mucosa to the serosa and then rapidly lengthwise in the muscular and serosal coats, in which even the proximal portion of the appendix is involved quite early, enhances the histologic diagnostic advantages.[10] It is the custom of this laboratory to select a minimum of four specimens from each appendix for sectioning. In the gross and microscopic study of each specimen we have adopted the policy of giving the surgeon the benefit of any doubt. The high percentage (12.4 per cent) of the pathologist's diagnoses of proximal obstructive factor without inflammation, and 2.5 per cent of appendices with enterobius vermicularis and no inflammation, bears out this sympathetic tendency and more than compensates for any errors of missing minute areas of inflammation. All appendices including those removed prophylactically are examined by the pathologist. The latter group, however, are not included in this review. Furthermore, this study does not include those patients operated upon for appendicitis whose appendices were not removed.

During the three-and-one-half-year period of this review, there were 4,771 major operations, of which

TABLE I. COMPARISON OF MAJOR OPERATIONS TO APPENDECTOMIES

Year	Major Operations	Appendectomies	Percentage
1942*	536	131	24.4
1943	1265	229	18
1944	1485	319	21.5
1945	1485	321	21.6
Totals	4771	1000	20.9

*July 19, 1942 to December 31, 1942.

TABLE II. NORMAL APPENDICES IN APPENDECTOMIES

Year	Appendectomies	Pathologic Appendices	Normal Appendices	% of Normal Appendices
1942*	131	94	37	28.2
1943	229	146	83	36
1944	319	232	87	27
1945	321	253	68	21.1
Totals	1000	725	275	27.4

*July 19, 1942 to December 31, 1942.

TABLE III. A COMPARISON OF THE 321 APPENDECTOMIES PERFORMED BY SELECTED SURGEONS DURING 1945

Surgeon	Appendectomies		Normal Appendices	
	Number	Per cent	Number	Per cent
A	36	11.2	13	36
B	25	7.7	13	50
C	20	6.2	5	25
D	17	5.3	5	29
E	14	4.4	5	35.7
Total 5	112	34.8	41	36.6
All others	209	65.1	27	12.9

TABLE IV. CLINICAL DIAGNOSES IN SIXTY-EIGHT CASES WITH NORMAL APPENDICES

Surgeons' Working Diagnosis	Number of Cases	Same Final Diagnosis
Acute appendicitis	28	16
Recurrent appendicitis	18	16
Chronic appendicitis	10	7
Subacute obstructive appendicitis	5	5
Interval appendicitis	3	1
Interval obstructive appendicitis	2	2
Subacute appendicitis	2	1

1,000 (20.9 per cent) were appendectomies. The figures are broken down into years in Table I.

Among the 1,000 consecutive appendectomies reviewed, there were 725 in which the pathologist found some disease process including inflammatory, uncomplicated mechanical obstructive factors and pinworms, and 275 in which no pathologic condition whatever could be discovered, or in which the lumen was obliterated and there was no active inflammatory processes. These data are collected in Table II with an annual division of the experience.

We feel that appendices with obliterated lumina without active inflammatory changes produce no symptoms, and therefore have included eleven appendices (16 per cent) with obliterated lumina in the sixty-eight normal appendices. Obliteration of the lumen is generally regarded as a slow non-inflammatory atrophy which increases with age. Occasionally the lumen is obliterated by the repair processes following an acute inflammation. From a pathologic viewpoint, it is highly improbable that any of the multitude of symptoms or signs attributed to appendicitis can be caused by these long-established fibrotic changes. In a study of 400 cases by Ribbert[9], ninety-nine (25 per cent) showed partial or total occlusion. Obliteration of the appendix lumen increases from 4 per cent in the one-to-ten-year age group to 58 per cent in the seventy-to-eighty-year age group. More than half of all people over sixty years of age show obliteration, and in persons over twenty years of age the percentage is about 32 per cent.[9] Obliteration was not found in the newborn, the youngest patient being five years of age; however, in Ribbert's series total obliteration never occurred before the thirteenth year. According to Bell[2] obliteration of the lumen is found in over 50 per cent of elderly persons.

Table III demonstrates that five surgeons performing 112 (34.8 per cent) appendectomies during 1945 removed forty-one (36.6 per cent) normal appendices, while all other surgeons, thirty-two in number, with a total of 209 (65.1 per cent) appendectomies removed only twenty-seven (12.9 per cent) normal appendices.

Table IV illustrates that the final diagnosis, in spite of the pathologist's report of "appendix" (normal appendix), was the same as the original working diagnosis in the majority of the cases. However, it was comforting to note that in twelve cases of supposedly acutely inflamed appendices, the final diagnosis was changed by the surgeon to normal appendix in one, mesenteric adenitis in three, gastro-enteritis in four, ruptured corpus luteum cyst in one, diffuse myocardial disease in one, obstructive appendix in one, and recurrent appendicitis in one case. In a single case each of the patients pre-operatively diagnosed as subacute, interval, and recurrent appendicitis, the final diagnosis was changed to mesenteric lymphadenitis in two, and rheumatic diathesis in one.

A review of the clinical manifestations and physical findings of the sixty-eight appendectomies with normal appendices removed in 1945 reveals such disparity in the clinical case studies that an intelligent summarization is not possible. It is evident from Table V that 38.2 per cent of these patients had a leukocytosis of over 10,000. Only ten of the sixty-eight patients had a fever.

A most interesting observation was made in a study of the pre-operative urinary findings of the sixty-eight cases with normal appendices. Twelve (17.6 per cent)

TABLE V. TOTAL WHITE BLOOD CELL COUNTS AND TEMPERATURE IN 68 NORMAL APPENDIX CASES

W.B.C.	Number	Number in which temperature was above normal
4-6,000	10	1
6-8,000	21	3
8-10,000	11	none
10-12,000	7	1
12-14,000	9	2
over 14,000	10	3

TABLE VI. URINARY FINDINGS IN TWELVE OF SIXTY-EIGHT NORMAL APPENDIX CASES

Case No.	Urinary Findings
1	40-50 pus cells
2	4 plus albumin
3	1 plus sugar and acetone
4	3 plus sugar
5	1 plus sugar
6	25 pus cells
7	20 red blood cells
8	30 pus cells
9	60-80 pus cells
10	3 plus albumin and innumerable red blood cells
11	10-15 red blood cells and 2 plus albumin
12	1 plus albumin, 75-100 red blood cells, 100 pus cells

of these cases revealed changes significant of diseases outside of the appendix. These findings should have aroused suspicion and led to further investigation of some other plausible explanation for the symptoms. However, from a study of the charts of these twelve patients, in only two was there an attempt at following up these urinary findings.

Among the twelve cases with positive urinary findings there were three of special interest. One was a case of a twelve-year-old girl who had had a similar episode one year ago and was diagnosed pyelitis at that time. Another young woman, aged twenty-one, developed a rheumatic diathesis a few days postoperatively, and she had been diagnosed as rheumatic fever once before. A sixteen-year-old boy complained of pain in the left lower abdomen of one day's duration. Temperature was 101° with a white blood cell count of 13,250. Urinalysis revealed one plus albumin, 100 pus cells, and 75 to 100 red blood cells. The day after operation the patient developed a full-blown mumps orchitis.

Incidentally, it is our theory that this atavistic tendency for the appendix to obliterate is the basic etiologic factor in the great majority (75-80 per cent) of cases of acute appendicitis. Because of the greater strength of the muscularis in the proximal end, or for other reasons, fecal matter is not permitted to remain in this area. It does collect and cause dilatation of the lumen and atrophy of the walls in the distal end. The unhampered obliterating tendency thus progresses in the proximal area, constricting the lumen to a point where desiccated fecal matter cannot return from the distal part of the appendix. The stage is now set for the proper degree of irritation of the walls by the dried fecal matter and/or the presence of an organism of sufficient virulence.

Conclusions

1. Since one-fifth of the major operations in this hospital are appendectomies and more than one-fourth of the primary appendectomies were for normal appendices, according to the pathologist's report, the relative importance of this group of cases is well established.

2. These errors are committed primarily by a small group of surgeons who perform a relatively high percentage of the appendectomies.

3. From 15 to 20 per cent of normal appendices should be removed in a good surgical practice. This adequately protects appendicitis cases with mild manifestations.

4. This hospital's records of clinical manifestations are quite inadequate in the group of appendectomies in which normal appendices are removed.

5. The present common disregard of the pathologist's diagnosis of normal appendix has led to a false sense of infallibility, even to the neglect of obvious signs of disease outside of the appendix.

6. The basic etiologic factor in at least three-fourths of the cases of acute appendicitis is an atavistic tendency for the appendix lumen to obliterate. This narrowing process progresses more rapidly in the proximal end while the distal lumen is being dilated by desiccating fecal matter.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from September Issue)

Orson A. Case, an eclectic physician, practiced in various communities in southern Minnesota, probably beginning in the late fifties or the early sixties. He is said to have been the first physician, date not known, in the village of Sanborn, Redwood County. By 1864, presumably after leaving Sanborn, he was practicing in Preston, Fillmore County, and apparently was an active member of the community.

Beginning in February of 1866, or earlier, there appeared regularly in the *Preston Republican* his professional card, in the usual boxed form employed for such notices: "O. A. Case, Eclectic Physician. Office next door west of the Minnesota House, Preston." Out of the state for a time in 1866, Dr. Case returned to Preston the following year and in 1869 he was instrumental in organizing the Fillmore County Eclectic Medical Society. The first meeting was held in his office on May 3, 1869, and he became the first president; other members were J. J. Morey, perhaps then of Preston, but in the early seventies of Spring Valley and Etna; and J. W. Eighmy, then of Fillmore Village. In the seven years of the society's existence, Dr. Case served often as its president.

It has appeared in reminiscences concerning Dr. John A. Ross that Dr. Ross settled in Preston in 1869 in response to a call from the community for a first-class physician because Dr. Case and Dr. Lafayette Redmon were leaving to return to medical school, in compliance with changing conditions of practice. (The first attempt to regulate medical practice in Minnesota was made in 1869.) And this statement has been confirmed by the newspaper comment that in February, 1870, Dr. Case returned to Preston after spending the winter "upon a term of the Chicago Medical College," that he was better prepared than ever before to discharge his whole duty in the profession of medicine and surgery and that he and Dr. Ross, who in the meantime had become quite well and favorably known in the community, had formed a partnership. This editorial note as to medical study is born out by official records which state that in 1870 Dr. Case was graduated from the Bennett College of Eclectic Medicine and Surgery in Chicago.

The partnership with Dr. Ross was short-lived. By September Dr. Case had been appointed deputy coroner of Fillmore County and was in Chatfield, sharing offices with Dr. H. Thomas, who also was an eclectic practitioner. Less than a year later Dr. Case was in Fountain, but he soon removed once more to Preston, where he remained about two years, active in the Fillmore County Eclectic Medical Society, in civic affairs, in fraternal organizations and in his practice of medicine. From time to time there appeared announcements or statements from him regarding the business of the medical society and the state of public health—for instance, that the health of the people was improving, that the signs of epidemical diseases were disappearing; and, once, that he had procured genuine, reliable vaccine virus, which he could route to families desiring to avail themselves of this effectual remedy against the spread of smallpox. Lanesboro was his next choice of residence, where he remained from the spring of 1873 into 1875, or longer.

In these ten years at various times he issued invitations to all persons indebted to him for professional service or otherwise to come forward and settle at once, because he was leaving the state or the community or because, simply, he needed all that was due him with the least possible delay. Inasmuch as there was not always evidence of his departure, the latter reason probably was the chief one.

By 1877 this practitioner was in Grand Meadow, " a physician of fair ability," but he moved elsewhere the following year. Subsequently he again settled in Chatfield, because in the official register of physicians of the state of 1883-1890 he was listed as in that village, practicing under the Affidavit Law of 1887. In a later edition of the register he was enrolled, without address, as the possessor of an exemption certificate. His name did not appear in the first issue, in 1906, of the directory of the American Medical Association.

William Bicknell Coats, born in 1864, was a graduate, in 1886, of the College of Medicine of Syracuse University, in Syracuse, New York, and on April 8, 1889, then resident in Washington County, he was licensed to practice in Minnesota, receiving state certificate No. 62-B (R). Although in 1893 Dr. Coats received a license to practice medicine in Iowa, he remained in Minnesota for several years, following his profession in Harmony, Fillmore County, from 1896 to 1901, inclusive. He then removed to Sheboygan, Wisconsin, where he was in practice through 1918; thereafter for five years, although he was listed in the national medical directory as at Sheboygan, the entry carried the symbol which signifies "address unknown."

Isaac S. Cole, a native of Cheshire, Massachusetts, born in 1819, was attracted in his thirties by opportunity in the Middle West and in 1856 came to Chatfield, Fillmore County, with his brother, Sylvester, a druggist from Pittsfield, Massachusetts. Sylvester Cole, believed to be suffering from tuberculosis, sought alleviation if not cure of the disease in the salubrious climate of Minnesota.

It has been recalled that Isaac and Sylvester Cole erected in Chatfield a brick building in which they established a drugstore, the building that since has housed Richter's Drugstore, and that Sylvester, although never strong, continued as a druggist in the village until his death at the age of fifty-seven years. In the *Chatfield Democrat* there was published at various times in the summer of 1859 an advertisement of a new drugstore in Chatfield in which it was stated that a good assortment of "drugs, medicines, dyestuffs, perfumery, et cetera, et cetera," was kept at the New Brick Store and that they would be sold at reasonable prices by I. S. Cole, M.D.; also that strychnine was always on hand. Halloran, in his history of Chatfield written from memory, stated that Drs. Cole and Eggleston owned the first regular drugstore of which he knew in the village and that Cole, A. H. Trow and R. W. Twitchell were the first physicians of his remembrance. J. D. Eggleston, it has appeared, was not a practitioner of medicine, but for a time clerked for Dr. Cole and later was an independent merchant, first in Fillmore and later in Wykoff. Among the physicians in Chatfield of this same early period were also Drs. Luke Miller, D. N. Morse and, probably, (W. A.?) Morrison, an herb doctor.

Before the building of the new drugstore, however, the name of I. S. Cole appeared in the local newspapers of 1856 with that of G. E. Cole (a lawyer) as a banker and dealer in real estate and land warrants. When the village of Chatfield was incorporated, in 1857, Dr. Cole served as a trustee on the council; and in the year 1857-1858 he was a member of the village school board.

A tall, slender, dark-complexioned man, well groomed, who wore the conventional whiskers of the period, Dr. Cole is remembered in Chatfield both as a good citizen, worthy of the positions of trust which he held, and as a kindly, capable physician and surgeon who possessed the confidence of the community. Record is preserved in the *First Annual Catalogue of the Chatfield Academy,* of 1859, that he (like Dr. Luke Miller) was a lecturer on anatomy, physiology and hygiene at this institution of short but honorable history that had been organized in 1856. Although his was the varied practice of civilian life in a pioneer settlement, the chief mention of him professionally has been found in news items concerning local settlers which give evidence of his skill in treating the victims of serious accidents. He was called, for example, with Dr. Twitchell when Dr. William H. Dean, of Spring Valley, was injured; and in his own vicinity he took care of one Mr. Nathan P. Langdon, who "was shot in the leg below the knee, breaking both bones and otherwise mangling his limb in a horrible manner. He was immediately taken to Chatfield and placed under the treatment of Dr. Cole of that place, but in spite of the best of care it became necessary to amputate the limb." A later comment disclosed that Dr. Luke Miller, who had assisted in dressing the wound a week after the operation, the first time of dressing since the amputation, stated that the patient was doing well and that no doubt was entertained of his recovery.

When Dr. Cole came from New England in 1856, he brought with him his wife, Mary J. Cole, aged thirty-three years, like himself a native of Massachusetts, and their little son, David, a year old; a daughter, Mary, was born in Chatfield in 1859. A census report of 1857 reveals that Dr. and Mrs. Cole were well endowed financially, in comparison with the average pioneer settlers, and that they were accompanied from the East by two servants, Richard Rice and T. Smith, each of whom was the possessor of some hundreds of dollars worth of personal property. Dr. Cole early built the beautiful brick residence, pretentious in its day, since known as "the Atchison house," in which the family made their home for the few years that they were in Chatfield. In spite of her superior advantages in the village, to the sheltered eastern woman the conditions of life in the frontier town no doubt seemed extremely crude and they perhaps were equally uncongenial to her husband. It has been said that early in 1861 Dr. Cole left Chatfield for the South, going first to New Orleans, and that Mrs. Cole who two years previously had returned to Massachusetts with the children, closed his affairs in Chatfield through correspondence with local agents.

Subsequently Dr. Cole rejoined his family in Massachusetts. The son and daughter lived to grow up; Mary remained unmarried; David died in his twenties.

In Chatfield Dr. Cole often was heard to say that if he ever had carcinoma of the stomach he would kill himself. He did not commit suicide, but unfortunately, while still a young man, he died from the disease he had so dreaded.

W. F. Coleman, a dentist as well as, and apparently more than, a physician, was in Chatfield in 1857 at least. Through the columns of the *Chatfield Republican* in that year he respectfully informed the citizens of Chatfield and vicinity that he was prepared to perform all operations pertaining to the science of Dental Surgery, and that he inserted teeth on pivots, gold, silver and gutta percha plates.

Robert L. Conkey was born in 1874 in Preston, Minnesota, one of the five children of Charles H. Conkey and Sara Ripley Conkey. A sister died in infancy; the three brothers, Harry, Edward and William, died in their adult years.

Charles H. Conkey, of Scotch parentage, was born at Beekmantown, New York, in 1828, and in the early years of Fillmore County came with his Canadian wife into the community of Preston to follow his occupations of merchant and miller. Mr. Conkey was a progressive citizen, active in civic and political affairs. He served as auditor of Fillmore County for six years and was state senator for three terms, in 1874, 1875 and 1877.

Robert L. Conkey, of excellent native ability and personal attributes, early decided on the study of medicine. Graduated from Rush Medical College in Chicago in 1897 and licensed in Minnesota in October of the same year, he at once began practice in the village of Canton. In 1898, by suicide, his promising life came to an untimely end. He was unmarried.

Charles McHenry Cooper was born on December 21, 1865, on a farm near Versailles, Indiana, the son of Lemuel Cooper and Jane Willis Cooper, American farmers, the father of English descent and the mother of Scotch ancestry. There were five other children, Evaline and Ann Margaret, Jesse and James, and an older brother who died of measles in an army camp during the Civil War.

When Charles Cooper was a young boy, he came with his family to a farm home in Olmsted County a few miles southeast of Rochester and on the outskirts of the village of Marion. He attended the common school in Marion but because in those years his health was frail his family thought him unable to carry the work of high school; consequently, it was not until he was twenty-one years old, when after his father's death he and his mother had moved into Chatfield where his sister Evaline was a teacher, that he entered high school. A brilliant student, he completed the course in three years and was graduated in June, 1889, as valedictorian; he is said to have had a perfect average in geometry, his theorems in which were all original. Premedical courses not being requisite at that period, in the autumn of 1889 he entered the College of Homeopathic Medicine and Surgery of the University of Minnesota and, although he worked his way and was in poor health, he again completed in three years the work of four years, and in 1892 received the degrees of bachelor of science and doctor of medicine; in the same year he was licensed to practice medicine in the state of Minnesota.

After graduation Dr. Cooper returned to Chatfield, the family home, to begin his professional career and he remained there as a general practitioner until his death thirty years later. His offices were in the Root River State Bank Building until 1912, when he established consulting rooms in his home; this residence stands on the boundary line between Olmsted and Fillmore Counties. During the years of Dr. Cooper's practice in Chatfield, other physicians of the town, some of them resident there for many years and some for a relatively short time, were John C. Dickson, since 1873; Florence J. Halloran and Charles C. Walker, both of whom began practice there prior to 1900; and F. L. Smith, W. L. Freeman, George E. Jackson, C. W. Woodruff and Alexander MacDonald. Some of the later group long had been in practice, some were new graduates, but all came to Chatfield in or after 1900.

Dr. Cooper was regarded by fellow physicians and patients as an excellent physician, able and conscientious, and by the entire community as a fine citizen.

He owned his home, was representative of all that was good and constructive, was public-spirited to an unusual degree, taking an active part in community affairs and promoting every worthy cause. He was a member of the Presbyterian Church and served as president and trustee of the Presbyterian Society. From 1902 to 1911 he was mayor of the village and from 1900 to 1920, when he resigned because of ill health, was president of the school board, in which capacity it was annually his privilege and pleasure to present their diplomas to the graduates of the high school. Because of his social ease and his gifts as an extemporaneous speaker he was much sought to give addresses and to preside at community affairs. Dark-complexioned, with a closely trimmed beard, and always scrupulously groomed, he was of fine appearance. He was affiliated with various fraternal organizations, among them the Masons (the Blue Lodge, in which he held the office of Worshipful Master; the Chapter, of which he was at one time High Priest; and the Knights Templar), the Modern Woodmen of America and the Ancient Order of United Workmen.

On May 1, 1895, Charles McH. Cooper was married to Kittie Cole, of Chatfield, an American girl of French and Dutch descent. Of the marriage there were four children: Russella Jean, Frances Eliza, Elisabeth and Charles Cole Cooper.

Dr. Cooper died of tuberculosis at his home in Chatfield on November 23, 1922, survived by his wife and the four children. At the time these notes were compiled, in 1943, all were living: Mrs. Cooper in Chatfield; Russella Jean, wife of G. A. Haven, of Chatfield; Frances Eliza, formerly a teacher in Minnesota, in Lewiston, Chatfield and Cokato, and for more than fifteen years at Casper, Wyoming; Elisabeth, a settlement worker in Minneapolis and Philadelphia, for many years in charge of work for women and girls at Labor Temple, New York City, and in latest years in charge of the Community House at Riverdale, New York; the son, Charles Cole Cooper, a physician of St. Paul, Minnesota, was, in July, 1943, a lieutenant in the Medical Corps of the United States Army stationed somewhere in Alaska.

A comment from Dr. Charles Cole Cooper is worthy of note: "Of special interest to me is the fact that my father was an open, that is, a contagious case of tuberculosis for many years, yet raised four children to adulthood and not one became tuberculous, because he recognized the contagiousness of tuberculosis and guarded himself accordingly."

N. S. Craig in April, 1870, began his practice as a resident physician and surgeon in the village of Granger, Bristol Township. He brought with him the endorsement and good wishes of the *Preston Republican*, which stated that Dr. Craig commanded the respect and confidence of all personal acquaintances. In his conventional business card Dr. Craig set forth that he would give prompt attention to all professional calls. His name was not noted in early business and professional directories of the state nor was a subsequent newspaper notice observed.

John W. Crees, probably then a middle-aged man, was one of the first representatives of medical practice in Fillmore County. In 1857 it was he who started the first drugstore in Preston and he remained in the village seven years longer. That he compounded medicines has been learned from sundry advertisements in issues of the *Preston Republican* in the early sixties. By 1861 he perhaps had given up the drug store, for J. B. Fox, general dealer in drugs and the usual "and so forth," was advertising the medicine of Dr. J. W. Crees, preparations which would seem to have been of all sorts, suitable for man and beast.

Dr. Crees served as a member of the board of county commissioners from January 7, 1862, to January 6, 1863, and was vice president of the *Preston Lyceum*, which was organized late in 1862. Active further in social and civic affairs, Dr. Crees with "Mrs. Dr. Crees" was prominent in making arrangements for celebrating the anniversary of the national independence on July 4, 1862, in a manner creditable to the village. Others identified with this occasion were Dr. and Mrs. Lafayette Redmon, of Preston, and the day was observed with much ceremony. In this same year, when recruiting of troops for the Union Army was in progress and when, locally, a resolution was passed to pay bounty to all enlisting men who had families, Dr. Crees was one of the signers.

Apparently well established in the community, Dr. Crees was elected county coroner, to serve from January 7, 1864, to January 3, 1865. An item in the *Republican* of April 22, 1864, called attention to the card of Dr. Crees which appeared in another column. The reporter stated that the doctor devoted his attention to the practice of medicine; that he had had experience and success in the treatment of diseases and was possessed of skill, as many would testify, and ended by recommending him to the patronage of those so unfortunate as to need the services of a physician. The professional card itself follows:

> J. W. Crees, M.D., most respectfully offers his services as a physician. He will devote his entire attention to the treatment of disease and having been many years in his profession believes himself competent to do justice to all who may think proper to employ him. His office is the second door west of the county office. April 22, 1864.

By the middle of June, 1864, however, Dr. Crees had removed to St. Anthony, Minnesota, to take charge of a water-cure establishment, recently put into operation in the Winslow House, which had been purchased and fitted up for that purpose by Dr. Trall, of New York.

The only other note available concerning this interesting practitioner has been that of Armstrong, in his paper on the history of medicine in Ramsey County, in a paragraph dealing with itinerant "doctors," to the effect that among these practitioners were Dr. Trallwill (Dr. Trall?), who lectured on hygienic medicine, and a Dr. Crees, "an old experienced medical electrician" who, in 1865, had opened a hygienic boarding house on Seventh Street below Broadway, in St. Paul, having come from St. Anthony, where he had been concerned with an institution of similar character.

H. Curtis was early in the village of Fillmore, a settlement founded in 1855 and re-organized in 1858. The little town, at the junction of Bear and Deer Creeks, had a hotel, the Tremont House, three stores and several grist mills in anticipation of custom from the excellent farms of the region. The doctor's professional card, as it appears in Bishop's *History of Fillmore County* of 1858, is as follows:

> H. CURTIS, M.D., Physician
> and Surgeon, Dealer in Drugs,
> Medicines, Books and Stationery,
> Perfumery, Paints, Oils, Sc.
> Main Street Fillmore

The only other note observed regarding this practitioner occurred in a newspaper item in December, 1867, concerning the performance of craniotomy to deliver a large child that was described dramatically as a monstrosity: "The operation was performed by Dr. O. A. Case assisted by Dr. Curtis. Mrs........... is now in a very comfortable condition, requiring but little if any medical attention."

(To Be Continued in the November Issue)

President's Letter

Minnesota's Prepaid Medical Care Plan

FEW things of an economic nature have such great possibility for preserving the present system of medical practice in Minnesota as has Minnesota's prepaid medical care plan. Together with similar plans now in operation in thirty-three other states, voluntary prepaid medical plans have been a serious obstruction to proponents of national compulsory health insurance such as the Wagner-Murray-Dingell Bill. Beyond that, it answers the challenge which the co-operative medical care group presents. Also, it provides a medium of extending to 80 per cent of the people, that is, all except the 10 per cent indigent and 10 per cent wealthy, the same health insurance program which so many industrial groups have sponsored. Moreover, it is a companion measure for prepaid hospital care plans which have proved so effective throughout the entire country. It is the medical profession's answer to our greatest economic problem, the increased cost of medical care. Under these circumstances, its scope is broad and its need is great.

Following recommendations of the reference committee adopted by the House of Delegates, meetings were held with officials of the Minnesota Hospital Service Association to overcome any obstacles that might interfere with the harmonious, desired relationship between the two groups. By-laws, constitution and articles of incorporation have been prepared in tentative form. In fact, the work of each of the four subcommittees has been brought up to date so far as that has been possible without final completion of all details.

Solicitation of funds from the membership, using a legally proper and protective form of pledge, was among the first steps recommended. The pledge was written by Mr. F. Manley Brist, and an effective, completely descriptive brochure was prepared by Mr. R. R. Rosell and his staff. These were both sent to every member with a request that each member volunteer through the pledge as much money as possible. Final features of the plan must be held in abeyance until the full $100,000 is subscribed. With the minimum amount $25.00, the maximum $500.00 and a membership of 2,500, to date (September 15) only $46,000.00 has been subscribed. And this is true despite the fact that a second appeal for funds has been made to the entire membership.

Many physicians use annuity insurance as a means of providing an income for the later years of life. Why should not physicians be willing to invest in the preservation of the American system of medicine—in a plan which would preserve their prestige, their independence and their right to exercise their own judgment, as well as insure their income? By investing $500 now in prepaid medical service, a physician can make certain of maintaining his present status and he can help maintain the health standards of this nation at their present high level.

If at the age of forty, for example, a physician has paid to a standard, old-line life insurance company $1,000 in premiums, at the age of fifty he may draw a monthly income of $5.34, or an annual income of $64. Assuming conservatively, that the average net income of physicians in Minnesota is $6,000 per year, the $500 premium paid to Prepaid Medical Service is then insuring an income 100 times as great as that purchased by an insurance premium twice as great. And the prepaid medical care income starts at once instead of ten years later. It even pays an additional 4 per cent dividend.

It has been asked, "Why does not the American or State Medical Association do something to prevent passage of such bills as the Wagner-Murray-Dingell Bill?" This type of voluntary prepaid medical care is the answer propounded by both organizations for such compulsory insurance plans. Here, truly, is a challenge. If we are not willing to insure our practices and the American System of Medicine by paying a single, reasonably small premium, let us not complain when government takes the reins and political medicine is imposed upon us.

Edwin J. Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

FINANCIAL AID FOR NEEDY PHYSICIANS

"That These Too May Live"

What a queer Guild are these—Physicians—
They toil and work to save the human kind,
With little thought of providence, they die
Still in the harness, because, too late they find
The busy, thoughtless world has passed them by.

That these too may live with heads held high
Against the day when illness lays them low,
Or Time with fleeting wings, swoops from the sky
And makes them memories of the passing show.

For these are proud folk tho even justly proud,
Who live their lives to ease the woes of man
Nor count the cost in cold, penurious terms
But render service when, and where they can.

These are the men and women set apart
Wherever civic centers may obtain
To set a certain standard mode of life
And with unfaltering courage play the game.

And play the game it is, until "Lights Out"
Comes ringing o'er the hill for the last call
And Man's humanity to man's epitomized
In these stout hearts who give their very all.

'Tis given to few of these to be secure
Who go beyond the busy days of life,
And so it gives us pause while still we toil,
To wonder how we may fare in the strife.

And thus a plea is born for those we love,
A "Benefit Fund" for these to carry on,
Who in their lonely hours may find surcease,
With heads unbowed, still face the setting sun.

May the road along their rim of life
Be strewn with roses at their feet.
The thorns are gone, there is no storm or strife
But only sweet contentment as the years repeat.

JOHN J. RYAN, M.D.

THE above poem was written by a member of the Ramsey County Medical Society in 1940 and appears in the brochure regarding the Ramsey County Medical Foundation which was founded in November, 1938.

We all know of one or more members of our profession who, owing to infirmities incident to declining years or other factors, have been in dire need during the last years of life. Too often a physician's widow is left without sufficient support.

In 1938 a few members of the Ramsey County Medical Society and the Women's Auxiliary founded the Ramsey County Medical Foundation. Impressed by specific examples of need, these members incorporated the Foundation as an organization separate from the society, making it an exclusively charitable organization for the benefit of only needy members and their families. All members of the county society are automatically members of the Foundation and now pay $1.00 a year dues, but the Foundation elects its own Board of Directors which in turn elects the officers. No disbursements are to be made until a fund of $25,000 has been accumulated, and thereafter only 50 per cent of the net earnings of the fund are to be used until the fund reaches $50,000.

How many medical societies have established trust funds or foundations to provide financial assistance to elderly members or their widows, we do not know. Doubtless there are a number. Our attention was called recently to one established in 1943 by Dr. Harold Swanberg of Quincy, Illinois, and the Adams County Medical Society. Known as the Swanberg Medical Foundation, it is to be operated exclusively for charitable, scientific, literary or educational purposes. Growth of the fund is assured not only from contributions but by a provision that not more than 80 per cent of its income may be spent annually. Because there is little precedent for the functioning of such an organization, the trutees of the Swanberg Medical Foundation are desirous of receiving suggestions.

Such a foundation provides a repository for direct gifts or bequests by will. Contributions are tax exempt. It also provides a way for grateful patients or institutions (such as municipal hospitals which have been accepting the services of physicians in caring for hospital patients, free and for part pay) to display their appreciation.

Every large county society should establish a foundation to provide assistance to members in case of need. It would be a simple matter for each state medical society to do likewise to provide for equally needy members in rural districts. While the purpose of such a foundation may well be charity in most cases, other activities such as providing for a medical library might well be considered. The present time is a favorable one for establishing such foundations when contributions are tax exempt and result in a reduction in income tax.

The medical profession as a whole has been rather thoughtless in making provision for aiding its needy members and their families.

ATOM BOMBING

FOLLOWING the bombing of Hiroshima and Nagasaki, the Army delegated the Manhattan Engineering District Investigating Group to make a first-hand investigation of the effect of atom bombing of the two cities, with special reference to immediate and late radiation effects. The group arrived on the scene of the bombing about a month after the bombs had been dropped, and the report gives as reliable information as is possible at such a late date.

The report states that the damage done by the explosion of an atomic bomb is the result of several factors: the blast of the explosion, the fires produced by the intense heat of the explosion, and the secondary fires induced by the destruction of buildings. Casualties are the result of blast pressure, flash burns due to the explosion, burns from fires, mechanical injuries from destruction of buildings, and radiation effects.

As the atomic bomb exploded above the earth, there was a downward thrust to the blast which destroyed everything within a mile radius, except certain reinforced concrete structures; and nearly everything within a three-mile radius was heavily damaged. The heat generated by the blast burned the surface of objects as far as a mile and a half distant. Resultant fires, aggravated by high winds blowing inwards towards the center of the fire, completely destroyed everything over an area of 4.4 square miles at Hiroshima. The presence of hills prevented such widespread destruction at Nagasaki.

No estimate could be made of the deaths resulting from the blast pressure alone. It was estimated that 75 per cent of the total deaths were due to burns which were sustained as far as two miles from the explosion. Some 95 per cent of injuries were due to burns caused either by the bomb itself or by secondary fires. The greatest number of radiation injuries were probably due to the ultra-violet rays which caused flesh burns. Effects from the gamma rays emitted by the atomic nuclei themselves were next in importance and were similar to an overdose of x-rays. According to the report, radiation injuries were primarily those suffered during the first minute following the explosion. There was no evidence that fission products or induced radioactivity caused any casualties. Injuries due to radiation by gamma rays consisted of epilation, petechiae, inflammation of the mouth and throat, bleeding, vomiting, diarrhea and fever. Blood platelets were reduced and in severe cases a leukopenia resulted. Nausea and vomiting appeared in a few hours and sometimes lasted two or three days. In the most severe cases, death from gamma ray radiation came by the tenth day, and in the less severe cases not for a month. Recovery occurred in the milder cases.

Some 66,000 people were killed and 69,000 injured in Hiroshima by the one bomb, and 39,000 were killed and 25,000 injured in Nagasaki by the second bomb, while major portions of both cities were destroyed. Such is the frightful toll which can be expected from atom bombing in the future.

Those who uphold the use of such a frightful weapon in warfare justify its use in the thought that thousands of American lives and probably an equal number of Japanese lives were saved because the bombing brought a speedy end to the war.

The atom bomb should be a convincing argument that there must never be another war. Support of the United Nations by every country in the world is the only way that war in the future can be prevented.

CHECK YOUR INSURANCE POLICIES

THE attention of holders of disability insurance in the Commercial Casualty Insurance Company was recently called to the fact that certain disability insurance policies contain a clause which stipulates as follows:

"If the insured shall carry with another company, corporation, association or society other insurance covering the same loss without giving written notice to the company, then in that case the company shall be liable only for such portion of the indemnity promised as the said indemnity bears to the total amount of like indemnity in all policies covering such loss, and for the return of such part of the premium paid as shall exceed the pro rata for the indemnity thus determined."

This means, in effect, that in case the insurance company has not been so notified you are paying a higher premium than you should for the actual existing coverage. You should immediately examine your policy or policies and ascertain whether this clause is contained in any policy. If so, you should write the company for a statement that in case of a claim it will not be prorated. The Commercial Casualty Insurance policy does not contain this clause.

It would be well to check other provisions in disability policies also. One policy we have encountered provides that after the age of fifty-five the indemnity is cut 50 per cent. Unless one reads his policy carefully, the possessor of such a policy would receive a distinct jolt in case of disability. Such provisions are included to enable insurance companies to charge lower premiums and, while legal, they constitute tricks of the trade which are not emphasized.

Read your insurance policies or have an insurance expert pass judgment on them.

COMPULSORY INSURANCE AND PUBLIC HEALTH

I AM speaking to you as the very retiring president of what may be considered the parent organization of the American Medical Association. You may recall that our state organization is forty years older than the national one and that leading members of this Society were predominantly active in the original effort to create a national organization, which now has become the largest and most important medical association in the world, far surpassing in size and extent of activities its original progenitor.

The principles of proper behavior in any walk in life, and particularly in the profession of medicine, are timeless and immutable. For forty years before the American Medical Association was formed, members of the New York State Society had adhered to certain concepts of ethics which ultimately became the "law of the land," so to speak, when formally phrased in Article 2, of the Constitution of the American Medical Association, which reads:

> The objects of the Association are to promote the science and art of medicine and the betterment of public health.

The first section of Chapter One of its *Principles of Professional Ethics* reads:

> A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession, an individual assumes an obligation to conduct himself in accord with its ideals.

This language did not constitute an original promulgation at the time it was first uttered as a canon of ethics. It was merely the crystalization of the characteristics of behavior of the best medical men at all times and in all ages, embodied formally in the foregoing words.

I have presented these considerations for the purpose of making the point, that it is nothing new in our tradition for emphasis to be placed on the maintenance of standards. Medicine would not have advanced through the centuries if this had not always been the motive activating the physician. For a comparatively brief period—almost a century and a half—the New York State Society has met annually for the purpose of increasing the quality of medical care, so we are indeed well fitted by a long tradition to continue to safeguard the best interest of the public today, when pressures for social novelties have become very great.

It is interesting to compare our background and long experience in providing medical care with that of those who are so vocal in new plans to completely revolutionize the practice of medicine. It happens that the training for fitness in this pursuit resides exclusively in the medical profession and none of it inheres in the principal promoters of the schemes who can be at best only administrators or salesmen of the services we render. Nor are they bound by any rule of responsibility for the statements they make in espousing their cause. Ex-Mayor LaGuardia of New York City, appearing and testifying at the hearing on the Wagner-Murray-Dingell Bill in Washington, recently said that if the bill were passed, he would then stop his New York program for delivering medical care. It is extremely difficult for me to understand how he can stop anything that was never started, for this plan has never sold a policy or treated a patient. In addition, he claimed that a baby cost $100 a pound in New York City. This, in spite of the fact that 13,459 babies were delivered in the municipal hospitals of our city during the year 1945. That 1945 was a poor year for obstetrics in municipal hospitals can be realized, when a service delivering 200 babies per month in previous years delivered but 75 per month in 1945. I want to emphasize that for the 13,459 babies born in municipal hospitals, no doctor received any compensation, but in accordance with the time-honored tradition of the medical profession, their services were freely given. This good proponent of the bill apparently did not realize that thousands of babies were delivered under the EMIC program, a program developed for the wives of men in the military forces. For these patients, the doctor's fee was $50, except in cases where complications demanded a specialist; then the amount was $75. The average baby weighs about six pounds. If Mr. LaGuardia's charge were true, the expense would be $600. When so many babies are delivered at such a small fee or for no fee at all, it is

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Delivered by Edward Cunniffe, M.D., Past President of the Medical Society of the State of New York, at the annual meeting of the Medical Society of the State of New York, New York City, May 1, 1946.

plain to be seen that there is something wrong with the good man's mathematics. Apparently the statement was made merely because it would attract attention by its sonorous phrasing, and advance the cause of socialized medicine, but not at all because there was any real basis to support it. Another example of this habit of overstating the truth is illustrated in the testimony of Mrs. Caroline Ware, who is president of the American Association of University Women, who claimed she represented 80,000 women and testified her society was in favor of the bill. Upon examination she admitted that her society had not held a convention since before the war and finally she was forced to admit that she had canvassed but thirteen women and the question asked was not about the bill but if they favored the extension of medical service. If they answered in the affirmative, they were supposed to favor a bill on which they had not offered an opinion. Yet she glibly reported her society in favor of it. The prize witness, however, was former Secretary Ickes who appeared in behalf of the bill and admitted that he had never read it but was in favor of it. When chided for this, he answered that most senators did not read bills before voting on them. I, myself, doubt very much whether Senators Wagner or Murray ever read the bill, and so far as Mr. Dingell is concerned, if he has read it, I am sure he does not understand it.

Mr. Altmeyer of the Social Security Board explained to the Committee that the bill would provide medical care cheaper than the existing system because the government and the employer would help pay for it. It might be pointed out that the government gets its money only from taxes and it is a simple rule of economy that increased costs can only come out of increased prices. Even Mr. Wallace rather belatedly admits that fact. While speaking of expense, it has been reported by some members of the Congress that for the administration of this plan it would be necessary to spend more than two billion dollars annually before a dollar goes to nurse or hospital or doctor. This expense would be for such items as directors, inspectors, paymasters, auditors, statisticians, stenographers, clerks, equipment, rent and so forth. This figure is based on the supposition of having one inspector for every thousand patients, whereas in England experience shows there has to be one inspector for every hundred patients. Mr. Altmeyer on questioning was forced to admit that neither Messrs. Wagner, Murray or Dingell wrote the bill but it was the brain child of Mr. Falk, who admits that he has spent ten years in preparing it. This is the fifth bill for socialized medicine that Mr. Falk has written, and had presented to Congress by some of the New Deal representatives, the last bill being the second one he had introduced in 1945. The first four bills presented were admitted to be unsatisfactory, so with all the government resources behind him and an abundance of time, working for ten years, it is now shown that he has failed to succeed in this attempt. A few days after the current bill was presented, the *New York Times* published an editorial that was somewhat critical, whereupon Mr. Wagner wrote a letter to the paper stating that he knew it was not a perfect bill but hoped it would be better after the hearing.

The bill, as you know, was skillfully maneuvered away from the Appropriations Committee and into the Committee on Education and Labor, of which Mr. Murray is chairman. It would take a considerable length of time to hear all those who wanted to testify, so the chairman in his goodness and generosity decided that only those representing national organizations could appear before the committee; consequently, the New York State Medical Society, consisting of nearly 20,000 doctors who deliver medical care, is not permitted to appear but can send a statement to be placed on the record. On the other hand, the Physicians Forum, an organization which claims to have a membership of about 700 and a Boston group, the remains of the old Committee of 400, were allowed to testify. These were the only physicians to testify for the bill and represent less than 2,000 members, while those doctors testifying against the bill represented 125,000. Practically all the testimony for the bill has been presented by government employes and women who represented very little. The committee, however, contains some very discerning members and it has been a daily occurrence to have the direct statements of the witnesses appearing in favor of the bill absolutely discredited upon cross-examination on their own statements.

Mr. Altmeyer, Mr. LaGuardia and others proclaim that the doctors would make more money under this program than they receive in the present system. As a matter of fact, the definition of a profession which is one of our principles of ethics stresses the fact that money is not the prime object, but rather the services it can render to humanity is its goal. They say that more money will be received by the doctors and yet the program will cost the people less. It is hard to understand how pay to the physicians can be increased, plus the expense necessary to establish the enormous bureaucracy necessary to administer it and still have the cost to the people lower than at present. This will require some further explanation on the part of the proponents of the bill.

There is no substitute for experience. The experience of every country in the world that has tried compulsory health insurance has been unsatisfactory. Now they propose to give this inferior medical care to the American people, in the Wagner-Murray-Dingell Bill. It can be likened to a hope and a wish for Utopia to arrive, coupled with an unlimited spending program to try to bring it about. It is the most unrealistic act ever proposed to the Congress, and assumes that government regulation in this country can be run more successfully than it has been in others where it has been tried. Today the people of our country get medical care by going directly to their doctor. Under this bill a government clerk steps in between the doctor and his patient, with memoranda, schedules, rules, regulations, directives, thousands of them, changed from day to day, all instituted by the little bureaucratic gods that are appointed in droves of hundreds of thousands by the Social Security Administrator. Under this bill the Social Security

Administrator will have more power over the health of the people of the United States, vested in his own person, than could ever be assumed and exerted well by a single individual.

Let us look over the record of the countries which have accepted compulsory health insurance. Germany, which was the first country to be burdened with this program, was at one time the mecca of students from all over the globe, seeking postgraduate education. In seventy years the cost of their program multiplied 100 times. Practically 50 per cent of all the money collected was used for overhead expenses to administer the program, the doctors receiving the benefit of practically one-half. The total social taxes subtracted from the wages in Germany left the employes with little, barely enough for living expenses, and rendered it impossible for them to even leave the country and seek what offered them a more fertile field.

In England in forty years the cost has multiplied seventy times. A New York physician of my acquaintance who worked for a while with a London doctor reported that they had an office on one side of the house for panel patients and another on the opposite side for private patients. In a three-hour period this doctor would see 100 patients under the compulsory health insurance plan, ask them what their trouble was, give them a stock prescription, and let them depart. He never saw a single patient take off his shirt and receive an examination with a stethoscope. The secretary of the British Medical Association is responsible for the statement that no system of medical care will be successful if control of it is in the government. The failure of the system in England should be a lesson to us in this country. We see the people of England rapidly socializing everything, and preparing, perhaps, to go over in time completely to the Russian system. If that is the direction in which we are also drifting, a good way to begin is with medicine, taxing that and then moving along to the coal mines and the other industries, each new step calling for more taxes, so that the burden becomes so great that nobody has any money left to buy anything and we all live on the largess of a beneficent and all-wise government which not only takes care of us from the cradle to the grave, but supplies us with living quarters, food to eat, clothes to wear, and rations everything out to those it likes and those it doesn't like, from shoe strings to automobiles. I say, if that is what the American people want, the Wagner-Murray-Dingell Bill will take us a long way toward it and make each further step easier toward complete regimentation, domination and dictatorship. This law will prepare us for such a situation by a series of headaches produced by our efforts to get a doctor when we are sick, from a government that has taken over the job of running and ruining the medical profession.

New Zealand's experience in so short a time as six years is another lesson to us if we wish to be warned in time. According to the Minister of Health of that country, it has degenerated into a racket. He describes hospitals filled with patients with minor ailments. Doctors no longer seek improvement of their skills in postgraduate education because they have no chance to put their abilities into practice; there is not sufficient time to spend with each patient, so extensive is the overuse of insurance facilities. Patients go to insurance doctors mainly for certificates enabling them to get paid for being sick, rather than to get over their sickness. People who are really seriously ill seldom think of using the compulsory insurance system. They go to a practitioner who does not take panel patients, and therefore has time to treat sick people. They would rather pay more to receive treatment from a physician who will have time to give a proper examination.

Austria and Italy have inferior medical service for their people. Dr. Dublin of the Metropolitan Life Insurance Company recently returned from a trip to Europe where he inspected the medical needs of France. He has reported that medical care delivered to the French people under compulsory insurance is very poor, and also reiterates that the medical care delivered to the people of the United States is the best in any country in the world. If such is the case, and he should be a good judge, it is hard to understand why the people of this country would listen to a proposal to establish a foreign system which has proved to be unsatisfactory.

I would like to speak on the other side of this question and tell of the great advantages that have been brought about by the medical care of the people of this country in the past seventy years under the leadership of the American Medical Association, but time will not permit. I can only say that the people of this country should consider long and carefully before they saddle such tremendous expense upon themselves and their children for inferior medical care.—Reprinted from *Vital Speeches of the Day,* Vol. 12, No. 16, June 1, 1946.

HEALTH SERVICE IN INDUSTRY

(Continued from Page 1016)

should have every inclination and obvious incentive to translate these relationships into the health activities of industry. It is unnecessary to point out that of the variety of non-medical activities associated with industrial health, good nursing based on suitable training and adequate concept of functions has come to be regarded as indispensable.

Conclusion

In conclusion, let me leave this thought with you. America in the eyes of the world stands today victorious and powerful. She is on the threshold of a tremendous industrial era. From here on and for what lies ahead, she needs, as never before, men and women with the courage to dream, the will to do, and a heart with the word *America* engraved permanently therein.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

MEDICAL LEADERSHIP CHALLENGED AT TWO HARBORS CONFERENCE

"Medical care belongs to the consumer! The producer—that is, the physician—cannot hope to furnish leadership in the distribution of medical care equal to what the consumer can!"

This was the gospel preached at a conference held recently at Two Harbors, Minnesota, a conference which was designed to touch off a nation-wide movement to bring together into one federation all co-operative health plans in this country and thus further "consumer-controlled" group medical care.

Into this co-operative health movement have stepped many representatives of education, politics and even the government itself, through some of its agencies. In full force, their delegates turned out at the Two Harbors conference to attempt to debunk federalized medicine, undermine doctor-sponsored voluntary prepayment medical care plans and come up as the champions of America's health, with the one and only answer to health needs—a grand and glorious federation of co-operative health plans.

Medical Profession Representatives Invited

Quietly observing the proceedings at the conference were three representatives of the medical profession, Thomas A. Hendricks, secretary of the Council on Medical Service of the American Medical Association; C. H. Crownhart, secretary of the State Medical Society of Wisconsin; and R. R. Rosell, executive secretary of the Minnesota State Medical Association. They were invited guests of the conference sponsors, although they took no part in the proceedings. The three men have prepared a joint report of the conference, noting the highlights, the trend of thinking of the delegates, identifying the speakers and leaders and presenting key quotations.

One basic fact is noted in this report, and that is that the co-operative movement, apparently capitalizing upon the proposed compulsory health insurance program of the federal government, is proceeding to point out that the doctors' answer to threatened federal control of medicine is not the right one.

Doctors Accused of Self-Interest

Using the catch-phrase "Medical care belongs to the consumer!" the consumer-control advocates insinuate that the health insurance programs sponsored by state medical societies belong to the producers, the doctors, and are operated for the benefit of the doctors and not for the public.

According to the report, there were some 200 delegates and visitors present from twenty or more states, four provinces of Canada, Hawaii and Nova Scotia. Many government employes were registered, practically all as delegates of Group Health of Washington, D. C. (This organization, the report adds, figured in the anti-trust suit of 1938.) Government agencies represented were, in the main, the Children's Bureau, the Farm Security administration and the Social Security administration.

It was also observed that the co-operative movement is to be forwarded in all lines by the Farmers Home administration, newly formed from the old Farm Security agency. This administration is setting out to emphasize the necessity of health achievements among the rural groups.

AMA Charged With "Crime"

Among the personnel making up the conference was Dr. Michael Shadid, founder of the Community Hospital at Elk City, Oklahoma, who was introduced as a pioneer in the co-operative health movement. He pictured the American Medical Association as "convicted before the bar of public opinion as guilty of both crime and misdemeanor." He said that its leadership was that of the blind leading the blind, that the AMA was contemptuous, as well as neglectful, of proper public health interest.

Another major speech was that of Dr. John B. Lawrence, associate director and staff member of the Group Health Association and Labor Health Institute of St. Louis, Missouri. It was he who said that physicians cannot furnish leadership necessary to distribute medical service, that medical service will hereafter have to depend on the consumer for its quality and character.

Cites Inadequacy of Rural Medical Service

Among his arguments for health co-operatives was the inadequacy of medical services offered in rural areas as compared to that obtainable in urban areas. He also brought out the Selective Service statistics on the percentage of rejections for military service. Dr. Lawrence criticized the commercial type of health insurance plan as inadequate and said that medical care cannot be bought by money alone. Voluntary prepayment medical care plans will succeed only with great difficulty, said he, because there is, first of all, an insufficiency of physicians, and, second, an insufficiency of physicians properly trained in preventive medicine!

Dr. Lawrence declared, "Medically owned or controlled plans provide only protection against catastrophic illness and that's about all that you can get out of them."

One speaker at the conference claimed that the insufficient number of doctors was due in part to a failure of the consumer to *demand* sufficient medical care. One small voice, representing no doubt the views of others on the Washington payroll, was heard speaking in favor of a national health program; this speaker was careful to make allowances for the development of co-operatives' voluntary plans.

Dean Clark Warns of Pitfalls

Dr. Dean Clark, who is medical director of Health Insurance Plans of Greater New York, was one of the few speakers to warn of the difficulties and dangers which are encountered in the setting up of group practice plans. He outlined several elements of such plans that should be examined—scope of service, how a plan affects the physician, the attitude towards the patient as a person under the plan, the quality of service available, the relationship between the physician and the plan. He pointed out with some emphasis that group health plans must always compete with the high standards of medical service of the community. Said he:

> "Without objective appraisal according to recognized standards, we are apt to be misled into a morass of half-baked, inadequate, haphazard plans that will inevitably set back our health progress for a generation and will result in all of us—patients and physicians—giving up in despair without having established a sound workable pattern, either professionally or economically."

Haven Emerson versus Kingsley Roberts

Dr. Kingsley Roberts, director of the Medical Administration Service, Inc., New York City, gave an extemporaneous talk, presenting his outline for a basic health conservation and prepaid medical care program. He warned that no matter what their medical care program is called, all those in the co-operative health movement must remember that they are "dealing in the long run with the problem of insurance."

Dr. Haven Emerson, professor emeritus, Columbia University, addressed the gathering and answered several points made by Dr. Roberts. Dr. Emerson warned that in all its attempts to set up medical care programs, the public must keep in mind that the sights have been set by the medical profession, which, he declared, has not, as suggested, been indifferent or sluggish. Any failure for health improvement programs to catch on, he said, is traceable to a failure of public interest, not to a failure of the profession.

Dr. Emerson cited the instance of the AMA's position a few years back on periodic health examinations, when, despite the publicity on the necessity of these examinations, and despite the work of the membership, the public has remained indifferent.

Soft-Soap Salesmanship Condemned

Nor did Dr. Emerson agree with Dr. Roberts that in the sale of the co-operative health program any and every device known, whereby public interest in the program could be heightened, should be used. Dr. Roberts had suggested that even the tactics of soft-soap salesmen could be employed, implying that the end would justify the means; but Dr. Emerson pointed out that there is no need for the public to follow "mountebanks" in solving problems dealing with so grave a matter as the nation's health. There are, he said, legitimate ways to promote public health education. He concluded by saying that the leadership in the field of public health education is likely to continue to come from the medical profession and that the leadership should be utilized by the American public.

Dr. Emerson was invited by the conference sponsors to address the get-together banquet. Permission was granted to him at one time during the sessions to address the delegates on the convention floor. It was then when he refuted some of the statements advanced by Dr. Roberts.

Dr. Emerson's words were addressed to a conference highly critical of the medical profession and at a gathering being bombarded by a huge amount of propaganda. He did not defend the profession so much as he challenged the basis of any criticism to the medical field.

"Let us from now forward," Dr. Emerson said, "discard the dishonest, politically expedient, but misleading and intellectually deceptive and confusing term 'health insurance' and commit ourselves, at least at this present stage of our immediate and pressing concern, to insurance that medical care will be available and will be paid for."

Co-op Organ Criticizes Emerson

"Where Were Those Ethics, Dr. Emerson?" was the caption on an editorial attacking Dr. Emerson's banquet address, which appeared in *The Co-operative Builder,* official organ of Central Co-operative Wholesale, The Co-op Guilds Clubs and the Co-op Youth League. The editorial took Dr. Emerson bitterly to task for his refusal to sit silently and accept the judgment being passed upon the medical profession. It called him "a medic of some school bench repute" and said that "if some doctors weren't so engrossed in their own, largely manual, skill" they wouldn't be such perfect examples of "drag-your-feet conservatism" and "stand-pat leadership."

The editorial accused Dr. Emerson of timing his remarks so that they could not be refuted. It said that he sat through the business sessions, when debate would have been welcomed, only to get up at the banquet and present a "time-killing harangue" at a time when "common decency" would prevent other conferees from answering him. The writer conveniently forgot Dr. Emerson's previous remarks on the convention floor and that he was an invited banquet speaker.

Claim Conference "Makes History"

A second editorial in the same issue of the paper proclaimed that "history" had been "made at Two Harbors!" The historic act, according to the editorial, was the voting to establish a Co-operative Health Federation of America. "Until now," it was stated, "the national (co-operative) movement has concentrated more on consumers' goods and farm supplies, particularly petroleum, and wherever co-op health care plans have sprung up, they've been developed spontaneously as expressions of the bitter need of the people." Now with a central agency, to "co-ordinate experiences and offer aid and advice" the co-operative movement can grow. Health care, the editorial insisted, "is a natural for the democratic co-operative movement."

There is, however, evidently some dissension in the ranks with regard to this latter point. One of the speakers at the conference made this remark: "Experience of co-operatives in the sale of groceries and similar items cannot support a program of prepayment insurance, for medicine is not a commodity." That was Harry Becker, president, Group Health Association, Washington, D.C.

Labor Plans to Found Own Non-Profit Medical Care Plans

Labor groups, to all appearances, will now begin campaigning in earnest for legislation to enable them to set up medical care plans in competition with doctor-sponsored plans.

Labor's determination to have a voice in medical affairs was evidenced by the attendance at the Two Harbors meeting of representatives both of the CIO and the AFL.

Indication of its determination to found its share of voluntary non-profit prepaid medical care plans has been made positive by action of the AFL, taken since the Two Harbors affair.

At the convention of the Minnesota Federation of Labor, held in Mankato in mid-September, among the resolutions placed before the delegates for their approval was one which recommends the passage of a Minnesota enabling act to foster the formation of non-profit medical care plans by labor and other lay groups.

Besides this, was the endorsement of the Wagner-Murray-Dingell Bill by Nelson H. Cruickshank, social security director for the American Federation of Labor, who told the delegates that "American workers need health insurance as much as they need fire protection."

Minnesota Academy of Medicine

Meeting of April 10, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 10, 1946. Dinner was served at seven o'clock and the meeting was called to order at 8:10 p.m. by the president, Dr. S. E. Sweitzer.

There were fifty-two members and three guests present.

Minutes of the March meeting were read and approved.

Dr. Carl B. Drake read the following memorial to Dr. John Armstrong, and a motion was carried that this be spread on the minutes of the Academy and a copy sent to Dr. Armstrong's family.

JOHN MILTON ARMSTRONG
1875—1946

John M. Armstrong joined the Minnesota Academy of Medicine on March 3, 1909, with the presentation of his thesis entitled "The Diagnosis of Smallpox." This was published in the Archives of Diagnosis in 1909. He served as president of the Academy in 1941. Beside being a member of the Academy, he was also a member of the Minnesota Dermatological Society and the Ramsey County Medical Society of which he was president in 1914.

He was born in Saint Paul, April 10, 1875, the son of George W. and Jane C. Armstrong, who came to Saint Paul in 1853. He was graduated from Central High School in 1894 and from the University of Minnesota Medical School in 1901. He was a member of Chi Psi and Nu Sigma Nu fraternities. After serving an internship at St. Joseph's hospital in Saint Paul, he practiced a few months at Montgomery, Minnesota, before starting practice in Saint Paul in 1902.

John Armstrong specialized early in dermatology and genito-urinary diseases and was clinical instructor in the University of Minnesota Medical School from 1903 to 1916. In 1913-1914 he took postgraduate work in his specialty in Vienna and became a skilled diagnostician.

He took a keen interest in the history of medicine and medical literature in Minnesota and the country at large. It was he who began and developed the medical museum of the Ramsey County Medical Society. He was a member of the first Historical Committee of the Minnesota State Medical Association and began the publication in 1938 of the History of Medicine in Minnesota, in Minnesota Medicine. He maintained a steadfast interest in the Ramsey County Medical Library from the time he was first a member of the Library Committee in 1906. He also served on the Board of Trustees of the Hill Reference Library and was a member of the State Historical Society's Executive Committee.

John Armstrong was a lover of books and had an inquiring mind which led him into many phases of natural history, astronomy, and the microscopic study of fungi and parasites, geology, and even the Einstein Theory of Relativity. Archery was for years a hobby and he constructed beautiful bows and arrows made from imported woods.

He retired from active practice in 1941, but maintained his interest in life and particularly in books and libraries, in spite of poor health the last year of his life. Death came December 15, 1945, following a short illness.

He married Ida Dobyns of Shelbyville, Missouri, in 1909. Mrs. Armstrong and four children survive him: Jane, Anne (Mrs. W. A. Wallis), Elizabeth (Mrs. Russell T. Nichols), and John Milton, Jr.

Members of the Academy will be added to the list of those who knew him well and appreciated his keen mind and his friendship.

CARL B. DRAKE

Motions were made, seconded and carried that the Articles of Incorporation and the new Constitution, as well as the new By-Laws of the Academy be accepted.

The scientific program followed.

Dr. Logan Leven, St. Paul, read his Inaugural Thesis, entitled "Congenital Atresia of the Esophagus with Tracheo-Esophageal Fistula; Surgical Treatment." Lantern slides were shown.

The meeting adjourned.

A. E. CARDLE, M.D.
Secretary

Meeting of May 8, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 8, 1946. Dinner was served at seven o'clock and the meeting was called to order at 8:15 p.m. by the president, Dr. S. E. Sweitzer.

There were forty-five members and five guests present.

Dr. R. T. LaVake read the following memorial to Dr. Thomas S. Roberts.

THOMAS SADLER ROBERTS
1858—1946

Dr. Thomas Sadler Roberts, next to the last charter member of the Minnesota Academy of Medicine, was born in Germantown, Pennsylvania, February 16, 1858.

He was brought to Minneapolis when his parents settled permanently in this city in 1869 and attended the Jefferson Public School then situated at the present site of the Court House. From 1877 to 1879 he attended the University of Minnesota, then became surveyor and land examiner for the Northern Pacific Railroad in 1880 and 1881. He then went to the University of Pennsylvania and received his M.D. degree in 1885, and, after interning at the Philadelphia Children's Hospital and the Philadelphia General Hospital, Dr. Roberts came to Minneapolis and received his license to practice in 1886.

In 1887 he became one of the charter members of the Minnesota Academy of Medicine which held its first meeting October 12, 1887.

In 1901 Dr. Roberts became professor of pediatrics at the University of Minnesota, clinical professor of pediatrics in 1906, and emeritus professor in 1913.

From boyhood, Dr. Roberts had made ornithology a hobby and he pursued this hobby throughout his professional career. After a distinguished career of twenty-nine years as a physician, he decided to retire from active practice and devote the remainder of his life to his hobby of ornithology. He was made professor of ornithology and director of the Natural History Museum of the University of Minnesota in 1915. He kept up his interest in the Minnesota Academy of Medicine and became its president in 1936.

Dr. Roberts became the foremost authority on the birds of Minnesota and published his works on the Birds of Minnesota in 1932, for which in 1938 he was awarded its Brewster Gold Medal by the American Ornithologists' Union, for outstanding achievement.

Dr. Roberts was a member of Nu Sigma Nu, Sigma Xi, and Alpha Omega Alpha.

To few is it vouchsafed to achieve a distinguished name in two fields of activity. This he did. Apart from his scientific acumen, his most outstanding attribute was his power of winning the abiding friendship and absolute confidence of the most intelligent and discriminating men and women of his community.

Dr. Roberts died April 19, 1946. He is survived by his wife, Agnes Williams Roberts, a sister Mary Emma Roberts, both of Minneapolis; a brother, John Walter Roberts, Millville, New Jersey; two sons, Carroll and Thomas, and a daughter, Mrs. Joseph Seybold, all of Minneapolis.

Dr. Leo G. Rigler read the following memorial to Dr. Robert Glenn Allison.

ROBERT GLENN ALLISON
1887—1946

Robert Glenn Allison was born in York, South Carolina, November 25, 1887, the son of William Meek Allison and Nancy Glenn. He was graduated from the Medical School of the University of Maryland in 1912, following which he went to the Trudeau Sanatorium, Saranac Lake, New York, to do graduate study his intention being to specialize in tuberculosis. While there as house physician he became interested in the roentgenologic interpretation of chest films, an interest which, of course, remained with him throughout his life. In 1914 he became radiologist to the Municipal Tuberculosis Sanatorium in Chicago and remained there until 1916. A period of study in radiology with Dr. Louis Gregory Cole in New York City and at Cornell University followed. This had, without doubt, a profound influence on his future career.

He enlisted in the United States Army as a first lieutenant in 1917 and acted as radiologist in the Medical Corps, being discharged with the rank of captain on February 26, 1919. Thereupon he went to the Harper Hospital in Detroit, Michigan, where he remained for one more year doing radiological work.

In 1920 Dr. Allison came to Minneapolis, becoming an assistant professor in radiology at the University of Minnesota, spending half time as radiologist to the University Hospital. At that time he established an office for the practice of radiology in which he continued until his passing. In 1927 he gave up his active work at the University, devoting himself entirely to a very busy practice in his office and to his work at a variety of institutions. During his life he held positions as radiologist at the Glen Lake Sanatorium, the Lymanhurst School for Tuberculosis, the New Asbury Hospital, the Abbott Hospital and the Northwestern Hospital.

On May 5, 1922, Dr. Allison was married to Helen Bullitt Lowry who, with their daughter, Margaret Glenn, survives him.

Dr. Allison was a member of the American Medical Association, the American College of Radiology, the American Roentgen Ray Society, the Radiological Society of North America, the Minnesota Club in St. Paul, and the Minikahda Club in Minneapolis. He was an early member of the Minneapolis Academy of Medicine and the first radiologist to be elected to the Minnesota Academy of Medicine, which he joined on November 13, 1935.

Bob Allison will be long remembered for his pervading and charming personality. He was a most genial host, and an evening at his home was an enjoyable experience. A raconteur of the first order, he could illustrate any point with a keen wit. He represented that most unusual combination of great competence in a field of endeavor and an engaging manner which made him a friend to so many people. He made many solid contributions to radiology both in the fields of diagnosis and therapy. Dr. Allison's passing was a great loss both to this Academy and to each one of us personally.

A motion was carried that these memorials be spread on the minutes of the Academy and copies sent to the families.

The scientific program followed.

APPENDICITIS—PERSONAL EXPERIENCES

WILLIAM A. HANSON, M.D., and L. H. FOWLER, M.D.
Minneapolis, Minnesota

Since Huster's report[1] in 1753 proving that the vermiform appendix could be the seat of inflammation and abscess formation, and the suggestion by Meiler[2] in 1827 that the disease may be cured by surgical intervention, it remained for Reginald Fitz of Boston, Massachusetts in 1886 to arouse an active interest in the disease which he designated as "appendicitis." Since then many reports and treatises have been written on the subject.

From a review of acute appendicitis on the surgical service of the Students Health Service at the University of Minnesota from 1931 to 1946, we wish to report in brief 422 consecutive cases of diagnosed appendicitis with operation and complications without mortality. The number of cases varied per year, the greatest number, fifty-five, occuring in 1939 and 1940. The smallest number, twenty-one, were in 1941 and 1942 period.

One may make reference to any standard textbook of surgery regarding the symptomology of the disease; however, we believe that pain with its proper interpretation, tenderness over McBurney's area in conjunction with Rovsing's and Lister's signs, are of paramount importance in diagnosing the disease. It has been our observation that the majority of patients have a normal pulse and temperature on admission, which agrees with the report of one of us (Fowler[3]), in a previous review of 250 cases. The average leukocyte count in the series of cases was 14,652 per cubic millimeter with an increase of the polymorphonuclear cells. However, we discovered between 5 and 10 per cent of the cases revealed a normal or subnormal leukocyte count.

In this series of 422 cases there were seventeen case or 4 per cent with perforated appendices and an incorrect diagnosis in 13 per cent, inasmuch as there were other pathological conditions to account for the symptoms presented on admission. It should also be stated that three surgeons, L. H. Fowler, W. A. Hanson and O. J. Campbell performed the operations in frequency as named.

Retrocecal and ruptured appendices gave us most concern, and gastro-enteritis of virus origin was frequently encountered and simulated the symptoms of appendicitis. In summarizing the series we observed in patients with ruptured appendices, three factors stand out: (1) the patient did not seek consultation until several days after the onset of the symptoms; (2) purgatives for indigestion were frequently taken; and (3) errors of diagnosis were made.

Of the seventeen patients with perforated appendices, eleven required two operations. Meckel's diverticuli were present in three cases, carcinoid of the appendix occurred once, and one large mucocele was found once at operation. The average age of the patients was 20.1 years, the ratio of males to females was 7 to 5, and hospitalization averaged 14.9 days.

Regarding anesthesia, 97 per cent of the patients were given novacain, metacain, or pontocain, generally in the third lumbar interspace, with reinforcement in a few of the cases with ethylene, nitrous oxide or cyclopropane, while three per cent received inhalation anesthesia alone.

McBurney's incision or its modification was used in the majority of cases. Less than 1 per cent had pulmonary complications. One patient had a pulmonary infarct or right basal pleurisy of a minimal character, and another experienced a postoperative evisceration ten days after appendectomy for acute gangrenous appendicitis, undoubtedly due to a severe hay-fever asthma which was uncontrollable and acute bronchitis, with the evisceration occurring in a right lower rectus incision. One patient required an enterostomy after ten days for an intestinal obstruction of the small intestine, and one had an intussusception of the terminal ileum into the ilio-cecal valve with intestinal obstruction, requiring operation six months after appendectomy for acute suppurative appendicitis.

We have employed the sulfa drugs since the report of its use, by Sterling, Mueller and Henry Cave of Roosevelt Hospital in New York[2,5], in ruptured appendices and spreading peritonitis. As a rule 6 to 8 grams of sulfanilamide have been used intraperitoneally with drainage. However, in a few cases sulfathiazole was used in the same amount. Since 1943, at Dr. Wesley Spink's suggestion[6], sulfanilamide has been used intraperitoneally and sulfadiazine intravenously and orally. We had encountered urinary suppression in two patients due to sulfathiazole which, however, was minimal in character and disappeared following increased fluid intake and further alkali administration.

Dr. Henry Cave[2] has reported 1,000 cases of appendicitis with three deaths. Of these, drainage was instituted in 35 per cent of the cases and sulfanilamide was used in 40 per cent.

We also found it advantageous to use Wangensteen's[8] nasal suction postoperatively until no distention was present, with penicillin intra-muscularly as indicated. In addition, intravenous fluids were given, either 5 or 10 per cent glucose or 5 per cent glucose in normal saline with thiamine chloride 10 milligrams, riboflavin 5 milligrams and nicotinamide 50 milligrams. No enemas were given before the fourth or fifth day. Sedation was employed as needed.

Conclusion: We have presented a brief summary of 422 patients with acute appendicitis, some with complications of operation, from 1931 to 1946 without mortality, and in summary we wish to emphasize the importance of early diagnosis and operation when the decision is made that the patient has acute appendicitis. We also believe this has been possible through the splendid co-operation of the medical service whose members are "appendicitis minded."

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Discussion

Dr. R. T. LaVake, Minneapolis: It may seem strange that an obstetrician and gynecologist should enter into this discussion, but I am glad that the subject of appendicitis has been brought up because I would like to hear an expression of opinion on whether one should or should not invert the appendix stump. Some, of course, cannot be inverted. I was brought up to believe that it was almost criminal not to invert the stump but, after following that technique for seventeen years, Dr. Baldwin of Columbus persuaded me that merely tying off the appendix and dropping it back was the safer method. He and Dr. Deaver of Philadelphia had examined the records of three large Eastern hospitals as well as their own records and found the latter method safer from the standpoint of avoiding fecal fistulas and peritonitis. The most usual technique of inversion is to clamp and crush the appendix and tie in the track of the clamp and then carbolize the stump. They showed that after crushing the appendix one could not be sure of getting at the bacteria with a wooden applicator; whereas if you tie the appendix without crushing it with a clamp, you can eliminate all bacteria with the carbolic. Take plenty of time in doing this and then wipe it dry with gauze pressure.

Inverting has four disadvantages. The peritoneum and outer bowel coat around the appendix is so thin that no matter what your care in not penetrating the bowel you can get a culture from the needle used in over 30 per cent of cases. You may include a nutrient artery with a subsequent sloughing and blowout. You form a frequent abscess cavity between the crushed and tied stump and the inversion tie because you cannot asepticize the crushed appendix. This abscess often results in a complication until it breaks into the gut. By inversion you frequently produce a kinking which gives more postoperative symptoms of distress. By the tie method alone, Dr. Baldwin had done well over 2,200 appendectomies without mishap and with much diminished afterpain. My last seventeen years' experience with this method persuades me that Dr. Baldwin was correct. However, when one is called upon, in a gynecologic or obstetrical case, to remove the appendix, it is not pleasant to think that if disaster occurs, severe criticisim will ensue if the appendix has not been inverted. I would like an expression of opinion, though I feel sure that Dr. Baldwin's judgment is correct.

Dr. William P. Sadler, Minneapolis: In eighteen months on my ship in the Pacific, we operated on 164 cases of appendicitis. It would be interesting to know the pathologic diagnosis in Dr. Hanson's series.

Of our 164 cases, only three were of the interval variety with a history of previous attacks. Ten were classified as subacute and the remaining 151 were in all stages: acute suppurative, gangrenous, ruptured, and ruptured with appendiceal abscess. Our patients were received from other ships at various time intervals from the onset of their illness. Many were from ships with no medical officer aboard and were treated expectantly by the pharmacist mates who had given large doses of sulfa and/or penicillin. We had one death in our series in an acute ruptured appendix which was adequately drained. Autopsy showed death occurred from generalized peritonitis following rupture of a localized abscess which occurred on the tenth postoperative day. Dr. Hanson is to be congratulated on no deaths in his series.

In regard to Dr. LaVake's discussion, the choice of whether one inverts or doesn't invert the stump seems to rest with the individual operator. A large number of doctors in the navy didn't invert the stump and their cases seemed to do as well as ours who inverted. I do recall one death in a naval hospital of a case in which autopsy showed a blowout of the non-inverted stump with generalized peritonitis.

My experience with appendicitis at sea opens the question in mind whether prophylactic appendectomy under certain circumstances is not justifiable.

Dr. L. H. Fowler, Minneapolis: I take the liberty of trying to answer Dr. LaVake's question of inversion of the stump. When I first started out practicing some twenty-five years ago, I had offices with Dr. Dunsmoor. At that time I would assist him in his cases, and if I happened to get a case of my own he would turn around and help me. So far as I know, he never inverted the stump, and I am sure his results were just as good as mine. When I would invert the stump, he did not say anything against it, so one day I asked him about it. He said, "Every man should do it the way he sleeps the best at night." I have nearly always inverted the stump, and I think I have done between 500 and 1,000 appendectomies. I don't invert the stump if the cecum is extensively inflamed. Robertson demonstrated that when the stump is inverted there is an abscess develops between the purse-string suture and the stump. I tie off with plain catgut and then put in a purse-string suture. If an abscess forms, it will empty into the cecum and we still have a smooth exterior.

In answer to Dr. Sadler's question as to what the pathology was in the series of cases at the Health Service, 85 per cent of these we have done have been pathologically diagnosed as acute suppurative appendicitis.

In general, I am surprised that this subject is of interest to a group of men like this; but, when one considers that today appendicitis kills four times as many people under the age of fifty as cancer does, I think we can still follow Deaver, Murphy, and the other great surgeons, and discuss it over and over again. "Fifteen years of good luck" should have been the title of Dr. Hanson's paper. We must hasten to say that this low mortailty rate does not hold true in our private cases. These patients were all young; they came in early, and were operated upon early. House physicians have been trained to call the surgeon at the first sign of abdominal pain. A sudden onset of abdominal pain lasting twelve hours, which usually is not severe, localized tenderness in the lower right quadrant and usually leukocytosis, will warrant a diagnosis of appendicitis in 90 per cent of cases. The patient does not have to have a high leukocyte count. The crux is to operate when they have minimal findings. Ninety per cent of the cases in the first twenty-four to forty-eight hours have a normal temperature and pulse. Diarrhea is uncommon; in my experience, loose bowel movements will be present in about 4 to 5 per cent of the cases. Rectal tenderness is of little significance, unless the appendix is lying low in the pelvis. I prefer spinal anesthesia. I think it is the ideal thing for appendectomy, and one can do a much nicer and cleaner piece of work. I like a lateral modified McBurney incision.

The perforated appendices we could talk about all night. Unless a patient is definitely toxic with a distended rigid abdomen with undoubted extensive diffuse peritonitis, I still believe it will be better for the patient to have the appendix out in order to eliminate further contamination of the abdominal cavity. My experience has been that we do not do any harm and may do some good in taking it out. If the patient has a diffuse peritonitis and is very toxic, I believe in conservative treatment.

Dr. A. E. Benjamin, Minneapolis: There is one method of treatment of an abscessed appendix that has not been mentioned so far tonight. We have been in the habit of turning patients over on the abdomen when the appendix has ruptured and formed an abscess, and drainage is necessary. These patients will recover rapidly if this position is assumed. I have seen the appendix slough and come out through the wound where it has been unsafe to remove the appendix at the time of operation. In such cases, I have found it unnecessary to do a second operation to remove the appendix. When we have decided to invert the stump, we have not crushed the appendix, but tied the base off with a plain catgut suture and inverted it with a stronger and more durable suture. It seems unnecessary to puncture the intestine in placing this purse-string suture if it is carefully done. In some cases where we do not invert, we tie the appendix off with a fairly heavy catgut suture, carbolizing the stump and cover it with omentum.

Dr. W. A. Hanson, in closing: Regarding the inversion of the stump of the appendix, we have discussed the merits of this procedure. Generally, we have inverted the stump, but, in answer to Dr. LaVake's question of inverting the stump, we do not believe this is of great significance if one sterilizes the base with phenol and alcohol.

There can be no doubt as to the value of the sulfa drugs in reducing mortality in appendicits, when one reviews the literature. It is interesting to note the excellent results of H. W. Scott and P. F. Ware who report 506 cases of appendicits, with one death in 272 cases of acute unruptured appendicitis, and seven deaths in 234 cases of perforated appendicitis. They emphasize immediate operation and sulpha drugs in all cases.

There can be no doubt of the importance of early recognition in this never-ending stimulating surgical problem.

AN ARTIFICIAL SPHINCTER—A NEW OPERATION AND DEVICE FOR CONTROL OF URINARY INCONTINENCE AND NOCTURNAL ENURESIS

FREDERIC E. B. FOLEY, M.D.
Saint Paul, Minnesota

Abstract

Previous means of caring for urinary incontinence and nocturnal enuresis have been makeshifts and far from satisfactory.

A distinction must be made between correction of incontinence and care or control of the condition. The subject presented does not deal with correction or cure of incontinence.

The new means of controlling or caring for incontinence presented is accomplished by a very simple and minor operation and use of an equally simple device.

In the permanently incontinent adult male a segment of the urethra extending forward from the penoscrotal junction is isolated from the other structures of the penis by a plastic operation which forms a cutaneous tunnel between the cavernous bodies and the corpus spongiosum and its contained urethra. To the segment of urethra thus isolated, a very light-weight pneumatic incontinence clamp is applied. The clamp is inflated to compress the urethra and prevent escape of urine by an inflating device carried in the trouser's pocket. It would appear that a similar operation for isolation of the female urethra is feasible.

For control of temporary incontinence in the adult male, the pneumatic incontinence clamp may be applied to the whole circumference of the penis with its contained urethra. In boys with either permanent or temporary incontinence or nocturnal enuresis, the pneumatic clamp may be applied to the whole circumference of the penis.

The artificial sphincter, as the pneumatic incontinence clamp and inflating device have been called, permit what to outward appearance is normal urination.

The cutaneous tunnel operation, and clinical use of the artificial sphincter, are shown in lantern slides and a motion picture film.

Discussion

Dr. C. D. Creevy, Minneapolis: I think this is an extraordinarily ingenious device. Urologists are already indebted to Dr. Foley for his balloon catheter which has very much simplified the use of the inlying catheter and which has been of considerable assistance in controlling bleeding following the operation of transurethral resection. Now he has come forward with a device to aid in correcting one of the most annoying complications, from the patient's point of view, of prostatic operations. I believe that there is a very real and important place in urology for the operation and for the artificial sphincter of Dr. Foley's devising.

Dr. E. A. Regnier, Minneapolis: I would like to know what pressure is required in this closed system and what the fate of the urethra is going to be, due to pressure, and how often it has to be released to prevent ischemic necrosis.

Dr. Foley, in closing: It would not be a difficult matter to determine among different individuals the exact pressure in millimeters of water or mercury required to prevent the escape of urine. This would require only the connection of a manometer to the distention duct of the device. As yet I have not made such determinations.

It is surprising how little pressure upon the urethra is required to occlude it and prevent the escape of urine.

Most of these old men are bothered by their incontinence only when up and about. Most of them do not leak when in bed at night or at any time when in the recumbent position. At all events, they get along without too much discomfort with a urinal in bed at night. So it is possible to remove the clamp and relieve the skin of its contact for seven or eight hours out of the twenty-four.

One of these old fellows at the Ancker Hospital wore his pneumatic incontinence clamp night and day over a period of ten days. This constant contact of the clamp did not produce a significant irritation of the skin.

In cases of nocturnal enuresis the clamp is applied only during the night, and no skin irritation results. I have not had enough experience with the apparatus to know definitely just what may be required as to periodic removals of the clamp to avoid skin irritation.

The meeting was adjourned.

A. E. Cardle
Secretary

A gift of $250,000 for a new Institute for Research in Tropical Medicine to be located in Liberia was recently announced by Harvey S. Firestone, president of the Firestone Tire and Rubber Company. The gift is in memory of the late Harvey S. Firestone, Sr., and is a contribution to Liberia's celebration of its 100 years of independence as a republic. The new institute will be operated by the American Foundation for Tropical Medicine, of which Dr. Thomas T. Mackie is president. It was due to the farsightedness of Harvey S. Firestone, Senior, that rubber was developed in Liberia following World War I so that during World War II the Allies had a substantial source of rubber.

Minneapolis Surgical Society

Stated Meeting Held May 2, 1946

The President, Robert F. McGandy, M.D., in the chair

FIBROMA OF THE STOMACH

Case Report

W. H. RUCKER, M.D., F.A.C.S.
Minneapolis, Minnesota

Benign tumors of the stomach are not uncommon, yet they are encountered infrequently enough at the operating table to be of interest to the surgeon. Eusterman and Sentry, in 1922, found that only 1.3 per cent in their series of all gastric tumors coming to operation were benign. Their report, however, would tend to exaggerate the rarity of the actual incidence of these lesions. The majority cause few, if any symptoms, many of them are not diagnosed, a fairly large percentage become malignant before their discovery and some are overlooked at autopsy. Hillstrom, in 1930, stated that 5 per cent of all the gastric neoplasms coming to operation or found at autopsy at the University of Minnesota were benign. In 1936, Rigler and Erickson reported 26 per cent of 194 gastric tumors found at autopsy were not malignant, and also that 11 per cent of 239 neoplasms, diagnosed by x-ray, were benign. Schindler reported that about 1.5 per cent to 2 per cent of the patients he gastroscoped showed benign tumors. Unquestionably, in recent years the more frequent use of the gastroscope and improved technique in the use of the x-ray is discounting the rarity of these tumors and consequently bringing more of them to operation.

Approximately 65 per cent of all benign tumors of the stomach demanding attention are adenomas; some 25 per cent are smooth muscle tumors and about 9 per cent or 10 per cent are fibromas, angiomas and neurogenic tumors. Fibromas comprise about 3 per cent of the entire group. Other tumors, such as aberrant pancreatic tissue, lipoma, myxoma, et cetera, do occur but are rare. Adenomas, smooth muscle tumors and neurogenic tumors frequently become malignant but fibromas usually remain benign.

The symptoms caused by these growths depend upon their size, configuration and location and whether they ulcerate. Obstruction may result because of their size or pedunculation. When located in the body of the stomach, these lesions are often symptomless, but when near the pylorus they frequently give the clinical picture of peptic ulcers. Ulceration is the source of bleeding, commonly of a severe type.

Diagnosis is dependent upon accurate x-ray and gastroscopic examination, but the differential diagnosis from malignant tumors will demand actual removal and microscopic section.

Benign tumors of the stomach should be treated by gastric resection. Malignant growths have followed simple excision.

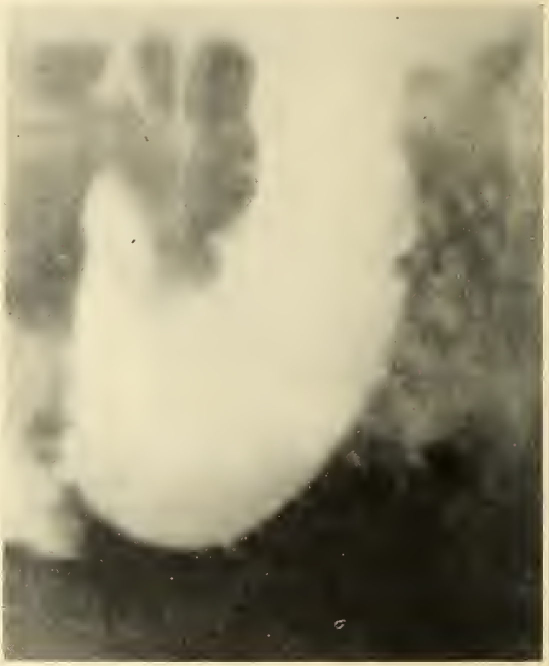

Fig. 1. Roentgenogram shows defect in lesser curvature of stomach.

Case Report

On January 3, 1946, a housewife, fifty-seven years of age, was first seen complaining of a pain in the epigastrium. She stated that this pain had begun rather suddenly twelve years earlier. It was severe and gnawing in character and occurred two hours after meals and also at night. It was relieved by soda and food, especially milk. At times she was nauseated but never vomited. Eight years before she had passed a large amount of bright red blood, and occasionally since had noticed small amounts of blood in the stool. She had always been constipated and for relief had taken cascara and bran.

In her past history we find that she had diphtheria as a child and tuberculosis at the age of fourteen. An x-ray taken of her chest two years ago was negative for tuberculosis. A partial resection of the ovaries, a uterine suspension and an appendectomy were done twenty-eight years ago. She has had two uncomplicated pregnancies and her menopause occurred nine years ago. Aside from the fact that she drank seven or eight cups of coffee each day and had lost 10 pounds in weight in the last eight years, her history was negative.

On physical examination she was a healthy appearing, well-developed woman weighing 183 pounds. Her temperature was 98°, pulse 68, blood pressure 134/94 and respirations 18. Except for the fact that she had artificial dentures, an accentuated first sound over the apex of her heart, impaired resonance over the base of the left lung, and slight tenderness in the epigastrium and over the descending colon, her physical examination was entirely negative.

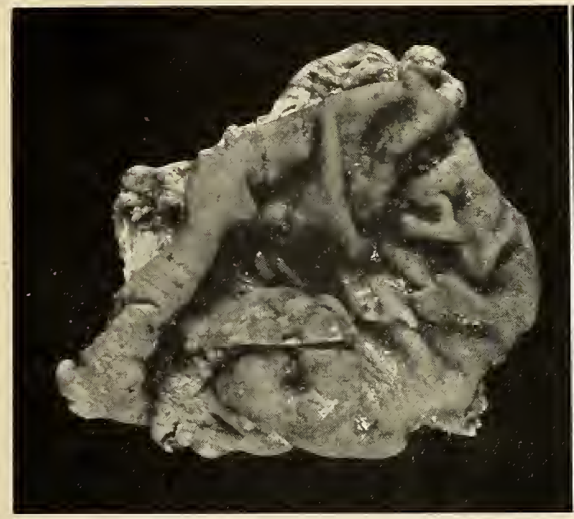

Fig. 2. Section of stomach wall shows tumor mass with ulcer crater.

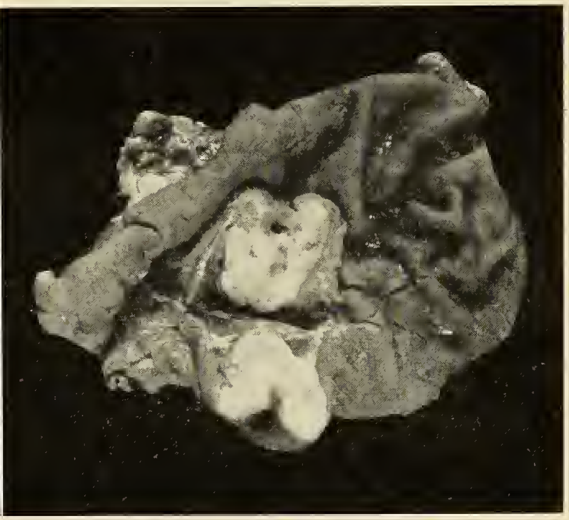

Fig. 3. Appearance of tumor on cross section.

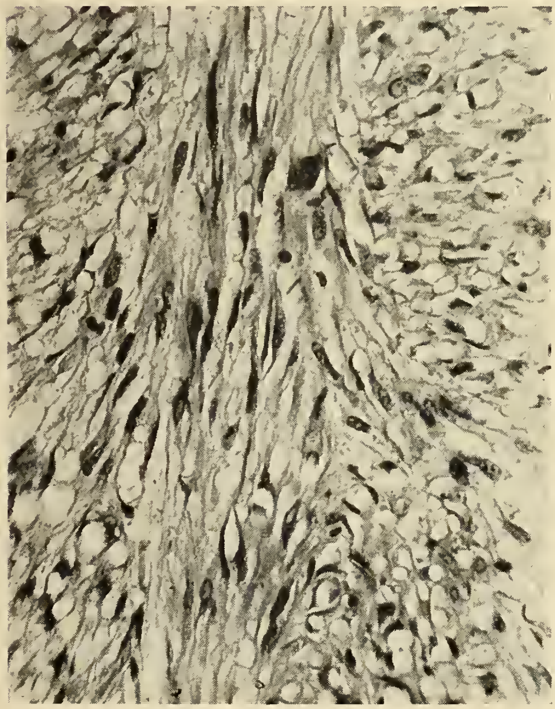

Fig. 4. Photomicrograph.

The urine was essentially normal; the hemoglobin 13.6 grams and the Kline exclusion test negative.

A tentative diagnosis of duodenal ulcer was made and the patient referred to x-ray for confirmation. The x-ray report completed on January 8 read as follows: "There is a definite filling defect associated with a filled crater on the lesser curvature of the stomach about 2 inches prepyloric. I would be very suspicious that this lesion is malignant and a second set of films should be made after medical management." She was placed on an ulcer regime, and when she returned February 10 her symptoms had disappeared. She felt well. X-ray examination was repeated and disclosed the following: "There is a defect in the pyloric end of the stomach on the lesser curvature side, this protruding into the stomach. Within this defect there is a small fleck of barium which represents an ulcer crater. Peristalsis passed through this region. The stomach is emptying at a normal rate. The weight of evidence is in favor of this representing a benign tumor. A leiomyma or lipoma should be considered."

Following this report operation was considered, and the patient entered the hospital on March 12 for further study. All essential laboratory tests were done. The urine and blood tests were normal, the hemoglobin being 13.9 grams. The sedimentation rate was raised to 37 in sixty minutes. The gastric analysis after histamine stimulation showed no achlorhydria. The stool showed 2 plus blood by the guaiac test. The electrocardiogram was negative. Films of the chest showed a markedly thickened pleura over the base of both lungs with large calcified pleural flacks. There were a few obsolete tuberculous calcified deposits.

A gastroscopic examination was described as follows by Dr. R. S. Ylvisaker: "Gastroscopy was carried out without difficulty after topical pontocaine anesthesia to the pharynx and upper esophagus. After a preliminary aspiration of the stomach contents the entire stomach was well visualized and the mucosa in general appeared rather pale. In the antrum of the stomach in the lesser curvature side is a smooth tumor mass which protrudes into the lumen of the stomach, being approximately 1 cm. high. The surface of this tumor mass is indented but the base of this indentation could not be visualized so that the absence of ulceration could not be allowed. There was some redness of the surface of the tumor mass. It is located just proximally to the pylorus but I do not believe it involves the pylorus. The balance of the stomach is normal except for the pale mucosa. Impression: Benign tumor of the lesser curvature side of the antrum of the stomach."

Having determined that the patient was in good physical condition and having confirmed the findings with the gastroscope, operation seemed indicated.

Operation was performed on March 18. A left transverse subcostal incision was made and the abdomen explored. No enlarged glands or other evidence of metastasis were found. The tumor mass could be palpated in the stoma on the lesser curvature. A small incision was made through the stomach wall and the mass inspected. The size, appearance and broad attachment of the tumor and the possibility of its being malignant made resection of the stomach the logical procedure. The incision was closed and a Hofmeister type of resection done. About one-third of the stomach was resected and a retrocolic anastomosis accomplished.

The patient withstood the operation well, made an uneventful recovery and left the hospital on the fourteenth postoperative day.

The pathologist, Dr. Stuurmans, described the tumor as follows:

"Macroscopic Specimen: Tumor of the stomach wall. Segment of stomach wall removed measures 3x4x9x16 cm. A submucosal intramural tumor, measuring 2.5 cm. in diameter presents into the lumen; a dimple presents at the apex, covered by mucosa, apparently representing a healed ulcer. On cross section the tumor is well encapsulated and appears benign grossly. The gastric mucosa presents nothing of note.

"Microscopic Specimen: On cut section the tumor appears to be of fibrous origin, rather than muscular; differential staining with azocarmine, VanGieson's and Foot's silver stain, rule out muscle and nerve tissue. The gastric mucosa and submucosa show heavy round cell infiltrate, edema and small areas of ulceration over the dimpled area of the tumor. At the depth of the defect only the surface epithelium of the mucosa is present, with no glands apparent.

"Diagnosis: Fibroma of gastric wall with overlying healing ulcer."

Summary

This case is reported because it involved a rather uncommon tumor of the stomach, a fibroma, and because it gave a classical textbook picture of this type of lesion.

SURGICAL TREATMENT OF GALL-BLADDER DISEASE

Report of 561 Consecutive Cases at Fairview Hospital

ARTHUR C. SKJOLD, M.D.
Minneapolis, Minnesota

In preparing this study of the surgical treatment of gall-bladder diseases it was felt that all cases in which the gall bladder was operated upon should be used. Statistics from 561 consecutive cases over a period of ten years, from 1936 to 1945 inclusive, at Fairview Hospital, Minneapolis were used. These records have been compiled on a yearly basis so that comparisons could be made. They have also been classified as to the types of operation, namely, cholecystectomy, cholecystotomy, choledochotomy and choledocholithotomy.

A pathological study and classification has also been made based on gross and microscopic examination of operative specimens by the pathologist, autopsy records and observations of the surgeon at the time of operation.

A comparison has been made with similar studies from other hospitals and clinics reported in the literature. The available records found, however, are from well organized clinics and large general hospitals, so there may be a large discrepancy in comparing our statistics with theirs.

The problem of stones in the common bile duct is one of more and more concern. It is felt by many surgeons and observers that the low incidence of stones found in the common duct is because there are so few choledochotomies done.

An attempt will be made to show you that the statistics from reputable clinics and hospitals indicate that where more explorations of the common duct are done there is a higher incidence of choledocholithiasis.

It is of general opinion among leading surgeons and investigators that the common duct be examined thoroughly at the time that cholecystectomy is performed. They also feel that an exploration of the common and hepatic ducts be done in all cases:

1. In which the common duct is definitely dilated or thickened.
2. In which a stone in the common duct can be palpated or is suspected.
3. In which the head of the pancreas is enlarged.
4. In which an aspiration of the common duct reveals a dark or murkey, cloudy bile.
5. In which an existance of pancreatitis or jaundice occurs.
6. In which the presence of chills and fever, nausea and vomiting has occurred.

It has been pointed out that in acute cases satisfactory examination and exploration of the common duct is omitted and often impossible because of the urgency of the situation. It is in these cases especially where common duct stones occur more frequently. In order to make a thorough examination of the biliary tree it is better to wait until the acuteness subsides so that a satisfactory examination and exploration can be done. It will be shown that our mortality is lower and our patients have a less stormy convalescence if the acute cholecystitis is allowed to subside before operation is undertaken.

It is possible that the low incidence of choledochotomies in our series of cases in this hospital may be due to early diagnosis and to early operation before involvement of the biliary tree and pancreas occurs. It has been definitely established by competent workers that involvement of the biliary tree and pancreas is definitely decreased by these early procedures. It is possible that the patients seen in a small private hospital appear for operation before these complications exist. We must not overlook the possibility that patients, in whom common duct stones may have been left, have gone to other surgeons or clinics for further surgical care.

The most common symptoms following a biliary operation in which a stone is still in the common duct

TABLE I. SUMMARY

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	Total
Number of Cases	41	35	53	43	56	66	56	58	67	86	561
Cholecystectomies	35	27	46	29	40	53	44	49	58	80	461
Cholecystotomies	5	8	6	13	12	11	9	9	7	6	81
Choledochotomies	2	0	3	3	1	1	11	9	2	2	34
Other Operations	11	13	26	8	11	16	5	18	15	21	140
Males	8	5	15	9	12	15	7	11	8	10	100
Females	33	30	38	34	44	51	49	47	59	76	461

is a persistent and recurring severe pain. There may or may not be jaundice present.

The presence of jaundice has not been felt to be of too great significance in dealing with biliary stones. The apprehension of dealing with jaundiced patients has now been diminished by the use of Vitamin "K," transfusions and the establishment of a bio-chemical balance.

A total of 561 operations on the gall bladder have been studied (Table I). In 1937 there were only thirty-five gall-bladder operations. This can be explained probably by the general economic situation occurring during the middle of the depression. Since then the number has gradually increased until 1945 when ninety-six gall-bladder operations were done.

Of these 561 gall-bladder operations, 461 were cholecystectomies (82.17 per cent). You will notice that the percentage of cholecystectomies has increased during the last six years until in 1945, 90 per cent of all the gall-bladder operations were cholecystectomies.

There were eighty-one cholecystotomies, a percentage of 14.43. This figure is high but has decreased from the high of 30.23 per cent in 1939 to the low of 6.97 per cent in 1945, when only six cholecystotomies were done out of eighty-six operations.

This decrease in cholecystotomies is due to better preparation of the patient, better surgical risks, earlier diagnosis and operation, and the realization the cholecystotomy is not a satisfactory operation.

There were thirty-four choledochotomies done. This is 6.06 per cent of the total number of operations. This percentage is small when compared to figures from large general hospitals and large clinics. It would be interesting to compare this figure with choledochotomies in other small private hospitals. We found nineteen cases of stones in the common duct, which is 3.56 per cent.

O'Shea reports 6.6 per cent choledochotomies at St. Vincents and Harlem Hospitals, New York City, with 5.5 per cent with stones in the common duct.

Heyd and Holtz report 7.7 per cent at Post-Graduate Hospital, New York City, with 6.3 per cent stones in the common duct.

Parsons reports 16 per cent choledochotomies at Vicksburg Hospital, Mississippi, with 15 per cent with stones in the common duct.

Lahey Clinic reports 37.5 per cent choledochotomies with 16.8 per cent with stones in the common duct.

TABLE II. PATHOLOGICAL CLASSIFICATION

	Cases	Per Cent
Obvious Pathological Cholecystitis Cholecystectomies) (Grades 2 & 3)	402	87.2
Possible or Borderline Pathology (Grade 1)	50	10.88
Cholesterosis with Inflammation	19	4.1
Cholesterosis Alone	3	.6
Cholesterosis with Stones	2	.3
Cancer	9	1.6
Cholelithiasis	439	78.2
Choledocholithiasis	19	3.56
Hydrops	8	1.42
Empyema	2	.3
Abscess in Abdomen	4	.7
Gangrenous Gall Bladder	9	1.6
Ruptured Gall Bladder	4	.7

Massachusetts General Hospital reports 44 per cent choledochotomies with 20.7 per cent with stones in the common duct.

Cheevers reports 37.9 per cent choledochotomies at Peter Bent Bringham Hospital, Boston, with 16.7 per cent with stones in the common duct.

Mattson reports twenty-nine choledochotomies out of 283 cholecystectomies at the Minneapolis General Hospital, which is about 10 per cent. He found stones in fourteen patients, which is about 5 per cent.

There were 140 other operations done simultaneously with gall-bladder surgery. These were mainly appendectomies. However, there were others, such as postoperative hernias and allied operations. The ratio of females to males was about 4.5 to 1, there being 461 females operated upon and 100 males.

We have found that the average age of individuals undergoing cholecystectomy was fifty-three years for males and fifty for females. The average age for cholecystotomies was 53.8 years for men and fifty-five for men. It is usually thought that individuals with gall-bladder disease are younger than this average age. This is possibly so inasmuch as many do not undergo operation until their symptoms have persisted for some time.

Our average age for cancer in the male was forty-nine, and in the female was 64.6 years. As we had only nine cases of cancer these figures are probably not too conclusive. These were all cancer of the gall bladder or bile ducts.

Probably the most interesting part of this study is the pathological aspect (Table II). In our obvious pathological cholecystitis group there were 402 cases, or a percentage of 87.2. This pathological determination was based on a polymorphonuclear and lymphocytic infiltration of the mucosa with gross thickening of the wall in grade 2.

In grade 3 there was a diffuse polymorphonuclear and lymphocytic infiltration throughout the whole wall, with necrotic and degenerative changes.

In our next group with probable or border-line pa-

TABLE III. MORTALITY

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	Total	Per Cent
Cholecystectomy	0	1	2	1	1	0	1	0	1	1	8	1.73
Cholecystotomy	0	1	2	3	1	1	1	2	1	0	12	13.95
Choledochotomy	2	0	0	0	1	0	0	3	0	0	6	17.64
Cancer	1	0	0	0	1	0	1	2	1	1	7	77.77

thology we found fifty cases or a percentage of 10.88. In this group there was only a lymphocytic infiltration of mucosa with beginning thickening of the wall.

We found nineteen cases of cholesterosis with inflammation (4.1 per cent), three cases of cholesterosis alone (.6 per cent), and two cases of cholesterosis with stones (.3 per cent).

There were nine cases of cancer (1.6 per cent).

Out of the total number of individuals operated upon we found stones present in 439 or 78.2 per cent.

O'Shea reported 47.2 per cent of cholelithiasis in his series of 1,575 cases.

Heyd and Holtz reported 69 per cent in their series of 3,306 cases.

Cheevers reported 44 per cent cholelithiasis in their series of 426 cases.

Stones were found in the common duct in nineteen cases which gives us about 3.56 per cent. We believe this percentage is low. There were only thirty-four exploratory operations on the common duct which would mean that stones were found in 55 per cent of the choledochotomies.

There were eight cases of hydrops (1.42 per cent), two cases of empyema (.3 per cent), four abscesses in the abdomen (.7 per cent), four ruptured gall bladders (.7 per cent), and nine gangrenous gall bladders (1.6 per cent).

Classifying the empyema, abscess in the abdomen, and ruptured gall bladder together, we had nineteen cases in this very acute group, contributing to a high mortality.

* * *

Eight patients (1.73 per cent) in our series died from cholecystectomy alone (Table III).

There were twelve deaths in our eighty-one cholecystotomies (13.95 per cent). Many of these cholecystotomies were done in acute cases which doubtless accounts for the high mortality. In reviewing the literature we found the mortality varied from 21 to 27 per cent. There were six deaths in those in whom choledochotomy was done. Several of these had been operated upon the second time which contributes to this mortality of 17.64 per cent. There were seven deaths in which cancer of the gall bladder or ducts was found, giving us a percentage of 77.77.

In reviewing the causes of death in the whole group of 561 operations, we find the largest number of deaths (seven) were due to cancer. Six deaths were due to pneumonia, six to shock and hemorrhage, four to peritonitis, two to coronary disease, two to pulmonary embolism, two to acute pancreatitis, two to ruptured gall bladder, one to a grangrenous gall bladder, and one to evisceration and cerebral hemorrhage.

It would be possible to group the four cases of peritonitis with the two cases of acute pancreatitis, the two cases of ruptured gall bladder and the one case of gangrene of the gall bladder, making a total of nine patients in this group who died from infection of the peritoneal cavity.

Because of the large number of deaths from cholecystotomies we felt we would like to break these down and briefly discuss each death according to cause of death, age, and white blood count. We found that eleven of these twelve deaths were in individuals over fifty-three years of age, that is, in older people. Another observation made was that in practically all instances in which there was a high white blood count there was a very stormy convalescence, requiring a long stay in the hospital, or else a fatal termination. In those that died we found seven of the twelve had high white blood counts.

Conclusion

A review of 561 consecutive cases of gall-bladder disease operated at Fairview Hospital, Minneapolis, from 1936 to 1945 has been made.

There were thirty-three deaths, a mortality of 5.8 per cent.

Cholecystectomies numbered 461 with eight deaths, a mortality of 1.73 per cent.

Cholecystotomies totaled eighty-one with twelve deaths, a mortality of 13.95 per cent.

Common ducts were drained and explored in thirty-four cases, a percentage of 6.06.

Stones were present in the common ducts in nineteen cases, a percentage of 3.56.

Cholelithiasis cases numbered 439, a percentage of 78.2.

There was a history of jaundice in seventy-one cases.

One cholecystogastrostomy was performed.

The death rate was found to be higher in elderly patients and in those in whom the condition was acute.

In reviewing the literature the consensus seemed to be that there was a higher mortality and a more prolonged convalescence in the acute cases when operations were performed early. It was definitely felt that better results were obtained if the acute phase was allowed to subside before operation.

Heyd, Holtz, Lahey, Walters and Graham all feel that early diagnosis of gall-bladder disease and early operation will prevent many complications in the *ductus choledochus*.

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ACUTE HEMORRHAGIC PANCREATITIS

Report of Case

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A fifty-five-year-old white male, veteran of World War I and father of six children, was first admitted to the Minneapolis Veterans' Hospital on March 18, 1939, complaining of epigastric pain radiating to the back, slight jaundice, anorexia, and occasional vomiting.

His past history revealed that in 1910, at twenty-years of age he contracted typhoid fever. While in the army in 1919 he experienced a severe attack of influenza, and since military service he has been periodically bothered by "rheumatism." Family history revealed that his mother lived to ninety-two, his father was accidentally killed at fifty-six, and of five siblings, one died at sixty of "stomach trouble."

The present illness had its onset in 1935 with an attack of painless jaundice lasting three weeks. In 1939 he suffered two attacks of severe epigastric pain radiating to the back and associated with nausea and vomiting. These both were of twenty-four hour duration. In February, 1939, a similar but much more severe attack required five days of hospitalization in Little Falls, Minnesota. A diagnosis of cholecystitis with stones was made at this time and cholecystectomy recommended. Between February 28 and March 14, three similar attacks occurred, the last one being quite severe and accompanied by mild jaundice. This last attack brought him to the Veterans' Hospital for his first admission.

He had noticed no food discrimination except meat, especially fat pork which seemed to disagree with him and occasionally percipitated an attack.

Physical examination on admission to the hospital revealed no abnormalities. Laboratory studies showed an icterus index of 5.5, and were otherwise normal. Cholecystography failed to visualize the gall bladder.

On April 12, 1939, a cholecystectomy without exploration of the common duct or pancreas was carried out and a thickened, scarred gall bladder filled with calculi was removed.

On the third postoperative day, a severe attack of epigastric pain radiating to the back and accompanied by fever of 4 degrees, vomiting and prostration occurred. This persisted for thirty-six hours and then gradually subsided. He was discharged from the hospital on April 25, 1939.

Following his discharge he did well until June 3 when he had an attack of epigastric pain with vomiting lasting twenty-four hours. A severe episode of similar nature, lasting four days and associated with mild jaundice and accompanied by periodic numbness and tingling of the hands and feet, muscle cramps, weakness and sweating, and "twiching" of muscles and of the face, occurred on June 8.

He was readmitted to the Minneapolis Veterans' Hospital on June 14, 1939. The only residual findings present at this time were muscle guard in the right upper quadrant and tenderness in the epigastrium. The icterus index was 7.5 and his white blood count was 6,500. Gastro-intestinal x-ray study revealed no abnormality. After thirty-two days hospitalization he was discharged with a diagnosis of common duct calculus, now having passed, and psychoneurosis with hysterical manifestations. The latter diagnosis apparently covered the history of numbness and tingling of the hands, muscle twitching and sweating.

The third hospital admission was November 19, 1939. Forty-eight hours prior to this admission the patient had been seized with one of his now typical attacks of mid-epigastric pain radiating to the back and accompanied by profuse vomiting. This seizure had come on a half hour after eating pork chops for breakfast. On admission the entire abdomen was rigid. The W.B.C. was 12,000, icterus index 20. Urine showed 1+ albumin. The possibility of a perforated peptic ulcer was considered, but upright films of the abdomen revealed no free gas. His acute findings gradually subsided by November 24 with return of laboratory findings to normal. A gastro-intestinal x-ray study revealed a non-typical deformity of the duodenal bulb, and an x-ray diagnosis of duodenal ulcer was made. The possibility of a common duct stone which had now passed was also considered. No adequate explanation of the initial diffuse abdominal rigidity was advanced. He was discharged January 19, 1940.

In August of 1941 the patient was again readmitted to the Veterans Hospital following a similar but quite severe attack. He complained that these attacks were very frequent with varying degrees of severity, and requested that something be done to relieve him. He also made the observation that with the more severe attacks he had stuffiness of the nose and ears and developed "red, itchy bumps, like mosquito bites" over his body. Studies on this admission revealed no new findings. The gastro-intestinal x-ray showed a normal duodenum.

During the next four and a-half years this man was incapacitated almost continuously. Each year he would experience four or five major episodes of severe epigastric pain radiating to the back, accompanied by vomiting, exquisite abdominal tenderness, prostration, and fever. These would necessitate three to four weeks confinement in bed, and were accompanied by nasal obstruction, plugging of the ears and urticaria, coming on about twelve hours after onset of the abdominal pain and lasting three or four days. Many minor attacks of pain occurred between the major episodes, often several times a week. These had the same inception as the major attacks, causing vomiting, prostration, and abdominal tenderness, but fading out after four to six hours and not accompanied by the nasal, aural, or skin manifestations. With many of the major episodes he noted numbness and tingling of the extremities, twitching of muscles, and muscle cramps.

On February 4, 1946, following breakfast, a typical episode of epigastric and back pain developed. Vomiting ensued, and gradually the severity of the pain increased. On the morning of February 5 the pain changed to a severe cutting or burning sensation, involving the entire abdomen and accompanied by persistent vomiting, profound weakness and prostration. He was seen by his local doctor who notified the Minneapolis Veterans Hospital that he was sending the patient in with an acute diffuse peritonitis. He arrived at the hospital in the early evening of this day. Examination on admission showed an acutely ill man, face suffused, flushed, and slightly cyanotic. His finger tips were shrunken, cold and frankly cyanotic. He was in very severe pain. The abdomen was diffusely rigid, somewhat distended, and rebound tenderness was exquisite and generalized. The abdominal wall was slightly edematous and the abdominal skin was faintly cyanotic and boggy. Admission temperature was 99.4°, blood pressure 108 systolic, 84 diastolic, pulse 128, respirations 30. Coarse râles were present over both bases of the lungs and percussion revealed increased dullness at the right base fusing with liver dullness below. Laboratory studies revealed W.B.C. 20,500 with 90 per cent PMN's. Urine showed 2+ albumin with both red and white cells in appreciable numbers. Fluid aspirated from the peritoneal cavity by diagnostic needle puncture showed 3,400 W.B.C. per c.c. and 4,500 R.B.C., many of the later undergoing hemolysis.

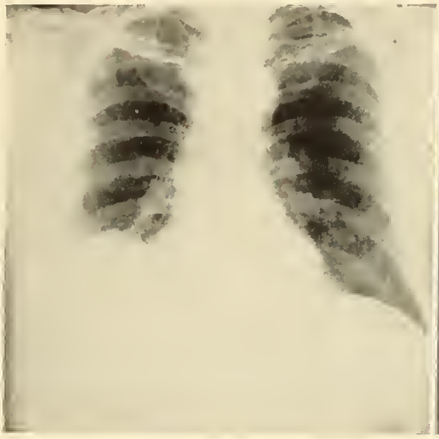

Fig. 1 (left). X-ray of chest taken in upright position on admission to hospital, thirty-six hours after onset of symptoms. Note increased density above and obliterating right diaphragm.

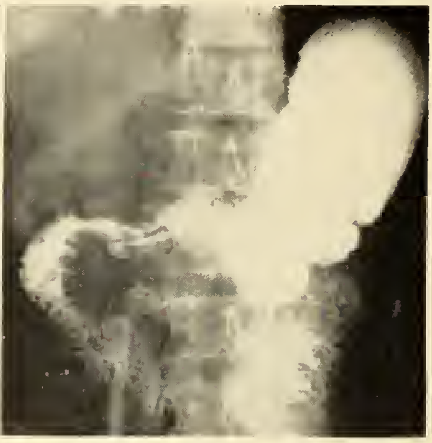

Fig. 2 (right). X-ray of upper abdomen, stomach and duodenum outlined by barium meal. Note small oval shadow just above first portion of the duodenum. This was thought to be a calculus in the common duct. Exploration revealed that it lay just where it is shown in this film, which is to the left of the suprapancreatic portion of the common duct.

A clinical diagnosis of hemorrhagic pancreatic necrosis was made, and blood sent to the University Hospital for emergency amylase determination. This showed 1,500 Somogyi units, confirming the diagnosis. Conservative management was elected. He was placed in an oxygen tent and gastric suction instituted. During the next four days while suction was maintained 500 c.c. of citrated blood and 4,500 c.c. of plasma with adequate crystalloids to maintain a good urinary output were administered. With the return of bowel function on the fifth day, suction was discontinued. In the following three days, 3,000 c.c. of plasma with 3,000 c.c. of 10 per cent amino acids were given. A gradually increasing dyspnea developed during this time. On admission an upright chest film (Fig. 1) had revealed increased density over the right diaphragm and physical signs of fluid were present. By the ninth hospital day these signs had increased considerably and aspiration of the right pleural space yielded 500 c.c. of opalescent bronze colored fluid. This fluid contained over 400 Somogyi units of amylase per c.c. Cellular elements were mainly small and large round cells. Cultures were sterile. This aspiration greatly relieved the dyspnea. However, on admission an indefinite mass was sensed in the epigastrium. This had now become very large, and as the remittent fever had gradually increased to a maximum at this time of 104° F., cautious exploration of this mass was felt advisable, the hope being that the mass would be cystic and its contents could be drained without soiling the general peritoneal cavity. Using local anesthesia a 3-inch incision was made through the old cholecystectomy scar and the mass explored without entering the general peritoneal cavity. It was found to be made up of extremely edematous omentum, mesentery and bowel all matted together. There was nothing to drain and the small incision was closed.

Beginning with the tenth hospital day, the patient began to improve. His fever gradually fell. He began to eat a little and strength slowly flowed back. The mass persisted and by the twenty-ninth day it was obviously cystic and the skin of the previous exploratory incision was reddened and bulging slightly. Under local anesthesia this softened area was incised and a large cyst containing over 1,500 c.c. of fluid resembling whey and containing many bits of necrotic tissue and fibrin was entered. This fluid was sterile on culture. A catheter was inserted in the cyst and drainage instituted. At first about 600 c.c. of white opalescent fluid drained away each day. This gradually diminished to 250 c.c. daily by the twentieth day, and ceased in forty days. The fluid from the cyst was of the same nature as pancreatic secretion collected from the duodenum by a special double lumen tube, and its flow was increased by the parenteral injection of secretion. We were also able to make the observation that pancreatic secretion can be influenced by psychic stimulation. After this patient's appetite returned, if we talked to him of his favorite foods the drainage catheter dripped profusely. No digestion of skin occurred about the opening of the sinus, supporting the physiologists' contention that it takes succus entericus to activate the trypsinogen secreted by the pancreas.

In the abdominal x-ray film made on this admission and in the films made on previous admissions, we found a calculus about the size of a navy bean in proper position to be in the common bile duct. The position of this calculus was rechecked by x-ray after the patient's general condition improved and again was found to be in the region of the choledochus. (Fig. 2). Somewhat later, the cyst having disappeared, we explored this patient's common duct. It was somewhat dilated, and contained a small amount of biliary mud, but no calculus. Bile aseptically removed for culture yielded colon bacillus. The calculus was found in the areolar tissue of the hepatico-duodenal ligament adjacent to the common duct. His postoperative convalescence has been uneventful to date.

Discussion

Although pancreatitis has been much more frequently recognized pre-operatively in the last few years, it still remains a very poorly understood disease, and as such it remains an unsolved problem. The mortality is high, the pathology has not been completely elucidated and the etiology remains in the realm of speculation. In brief, we have about as much light on the subject as Dante described in Hell: "just enough to illuminate the darkness."

However, with more frequent pre-operative recognition of the condition has come an appreciation of the advantages of conservative management, and a better understanding of the problem to be met in this management. Lampson[2] in 1942 reported a series of cases of hemorrhagic necrosis of the pancreas with a mortality of 33 per cent following immediate operation and only 5 per cent if surgical intervention is delayed. He advises suction, transfusion of whole blood, infusion of plasma, oxygen and chemotherapy as forming the essentials in the treatment during the acute phase. Drainage should be withheld until a pseudo cyst forms which can be drained without resoiling of the peritoneal cavity.

These cysts will spontaneously become obliterated with adequate and prolonged drainage. The rational of blood, plasma, chemotherapy and suction is sound. Blood is lost in very appreciable amounts during the hemorrhagic phase. Enormous amounts of plasma leave the circulation for the serous cavities which are irritated by seepage of the corrosive pancreatic secretion into them. The loss of plasma accounts for the peculiar cyanosis seen in many of these patients and soon leads to profound shock with severe hemoconcentration if not replaced. Albuminuria always occurs in the severe cases resulting in additional protein loss. Infection of the necrotic pancreatic tissue spreading to the retroperitoneal tissues and the peritoneal cavity is a frequent and serious complication. This may often be prevented by adequate chemotherapy, as it was in our case by 200,000 units of penicillin daily for the first fourteen days. With the acute peritoneal irritation ileus develops, and suction should be promptly instituted and maintained until bowel function returns.

One important complication which has recently been emphasized is hypocalcemia during the acute phase. Edmondson and Berne[1] have recently reported an interesting study of this problem. In thirty-six of fifty cases of pancreatic necrosis which they studied the blood calcium fell below 9 mgm per cent, sometimes between the second and fifteenth day of the illness. They found also that a serum calcium below 7 mgm per cent was associated with a fatal prognosis. I was not aware of this feature of the disease during this patient's acute illness, but certainly from his history it is evident that he has had mild tetany with some of the earlier attacks. His mild tetany was once diagnosed as hysteria on an earlier admission. Diabetes occasionally follows pancreatic necrosis, and periodic glucose tolerance tests are indicated to detect disturbed carbohydrate utilization during the course of the acute illness. So far in this patient no evidence of diabetes has developed. After subsidence of the acute phase, evaluation of the exocrine function of the pancreas should be undertaken by the utilization of a double lumen tube, one aperture opening into the stomach to remove gastric secretion and the other opening in the duodenum adjacent to the ampulla of Vater. Pancreatic response to secretion can thus be determined and some idea of its function obtained. This aids in subsequent management.

At present we are limited in our treatment of the basic causative factors to correction of any existing biliary pathology. Frequently none of significance is found, and frequently as in the case presented we have no assurance that subsequent attacks of varying severity will not continue to threaten the life of the patient. Effective definite treatment awaits better elucidation of etiology. We now know that Opie's classical case of pancreatitis with stone in the ampulla of Vater has been misinterpreted these many years. Simple regurgitation of bile into the pancreatic ducts does not cause pancreatitis. This has been demonstrated by countless cholangiograms which have also outlined the pancreatic ducts with no ill effects. However, infected bile will frequently cause pancreatitis if it enters the pancreatic ducts. Thus it seems that pancreatitis occurs in conjunction with cholangitis. This cholangitis may or may not be on the basis of biliary obstruction, as obstruction is not essential either to cholangitis or regurgitation. The possibility of pancreatic sensitization to biliary infection, with subsequent occurrence of the Arthus or Swartzman phenomena in the pancreas on re-exposure to the infectious antigen by its regurgitation into the pancreatic ducts, appeals to me as an excellent theoretical explanation of this disease which needs further investigation. The pathology fits all right, the sequence of events is proper, and the present case presents interesting generalized allergic reactions with each major attack.

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Discussion

Dr. E. A. Regnier: I would like to ask Dr. Jensen whether he knows the source of the loss of calcium and how early in the disease does it take place?

Dr. Jensen: Previous observers have attributed the loss of calcium from the blood stream to the formation of calcium soaps. The calcium soaps come about by the combining of calcium with the fatty acids liberated in the areas of fat necrosis, occurring with pancreatic necrosis. This explanation is not adequate, as calcium stores in the body, particularly in the skeleton, are too abundant and mobile to allow blood depletion by this mechanism. What the true explanation is remains yet to be discovered.

In answer to the second part of your question, how early in the disease does the loss of calcium take place, I do not know the earliest observation made, but it is safe to say that in the first twenty-four hours the blood calcium will begin to fall. The lowest point is reached some time between the second and the fifteenth day of the disease. On an average, the lowest blood calcium levels will develop on the sixth day. Some observers have felt that a blood calcium of 7 mg. per cent uniformly carries a fatal prognosis.

Dr. A. A. Zierold: I should like to ask Dr. Jensen if he has any reason to believe that the calculus might be a pancreatic calculus? It is quite as plausible to consider pancreatic calculi as the source of trouble as it is calculi within the gall bladder or even within the common duct. Apparently, here, we are not able to identify stones in the pancreatic duct as well as is done elsewhere.

Dr. Jensen: The calculus recovered at operation was found to the left of the common duct and superior to the first portion of the duodenum. Thus it was well out of the area occupied by the pancreas. Your point that pancreatic calculi can be the source of pancreatic necrosis is well made.

Dr. Willard White: Back in 1938 and 1939 the patient was having repeated episodes. Was there any reason why he shouldn't have been operated on at that time? He had a pretty good clinical picture of stone in the common duct at that time, and I wonder if there is any reason why operation was not done.

Dr. Jensen: From the records of the previous hospital admission, I have not been able to find any reason why this patient was not operated on and the common duct explored prior to his present admission. It may well have been that consent for the operation was not forthcoming until his recent severe crisis, which frightened him sufficiently to make an operation seem worth while.

VOLVULUS OF THE STOMACH

Report of Case

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Volvulus of the stomach is a relatively uncommon condition. The rotation or twist in such a case may occur around a vertical axis (volvulus organo-axialis) or around a transverse axis (volvulus mesenterio-axialis). In order that volvulus may occur it is essential that there be elongation of suspensary ligaments of the stomach and a fixed axis about which the rotation may occur. The volvulus may be total and acute, or partial and intermittent.

The following case report summarizes the essential data concerning a patient with intermittent partial gastric volvulus of the mesenterio-axial type who was treated recently at the Veterans' Hospital.

Case Report

W. F., male, aged fifty-nine, was admitted to the hospital February 15, 1946. He stated that he had been well until November 1, 1945, when he had developed an intermittent, dull pain in the epigastrium. The pain was most severe immediately following meals and it persisted for about one hour after the ingestion of food.

In December 1945, the pain became more severe. It continued to be intermittent in character. The patient also developed nausea and vomiting, and on several occasions he vomited a coffee-ground material and had tarry stools.

He entered a hospital in his local community January 15, 1946. A diagnosis of peptic ulcer was made, and he was placed on an ulcer regimen. His symptoms were alleviated, but they were not completely relieved. He was discharged from the local hospital February 9, 1946.

The patient stated that he had suffered a weight loss of approximately 40 pounds during the four months preceding admission.

The past history revealed that he had had an inguinal hernia on the right side for four years. He had suffered a moderately severe frostbite of both feet in 1935.

Examination revealed a well developed, adult, white male, showing evidence of recent weight loss. The temperature and pulse were normal. The abdomen was flat, and there was no muscle spasm. The patient complained of tenderness throughout the upper abdomen, most marked in the epigastrium. There were no palpable intra-abdominal masses. There was a reducible indirect inguinal hernia on the right side.

The hemoglobin was 14.3 grams, the red blood cell count was 4,700,000 and the leukocyte count was 6,900. The urine was negative. The gastric contents contained 50 units of free acid with the histamine test. Stool examinations demonstrated the presence of occult blood.

X-ray examination revealed a partial volvulus of the stomach and the niche of a gastric ulcer on the lesser curvature in the middle third of the stomach.

The patient was treated by bed rest, sedation, and a bland diet for approximately four weeks. The ulcer crater diminished in size and the patient improved symptomatically. The postprandial pain, however, persisted, and x-ray examination again revealed the presence of mesenterio-axial volvulus of the stomach.

On March 18, 1946, subtotal gastric resection was performed, using Dr. Wangensteen's technique for aseptic anastomosis. At operation the duodenum was found to be extremely mobile due to persistence of its dorsal mesentery. The mobility of the duodenum permitted the lower portion of the stomach to move anteriorly, upward, and to the left. The upper part of the stomach, on the other hand, was fixed by the gastro-hepatic ligament and by the left gastric artery, the fixed portion providing an axis about which the torsion occurred. At the midportion of the lesser curvature there was an indurated, benign ulcer about 7 millimetres in diameter. Whether the ulcer was a factor in the production of the volvulus or was secondary to it was impossible to ascertain. However, since it was located at the point on the lesser curvature where the deformity due to torsion was greatest, it seemed most likely that the ulcer was secondary to the volvulus.

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The postoperative convalescence was uneventful. X-ray examination demonstrated a well-functioning stoma, and examination of the gastric contents revealed achlorhydria both before and after the administration of histamine.

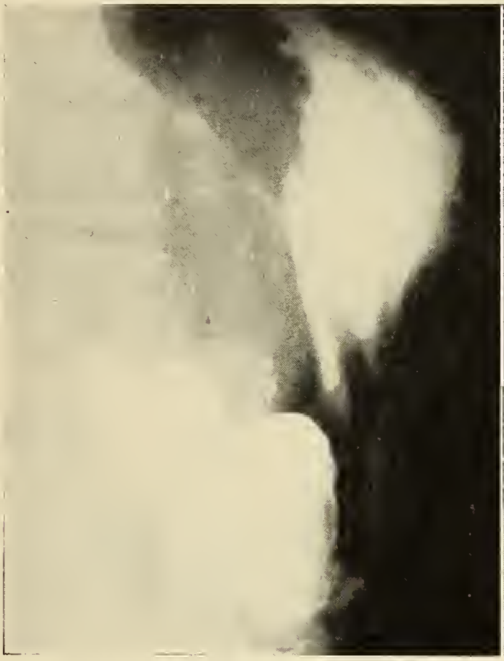

Fig. 1. Roentgenogram shows partial **volvulus of the** stomach.

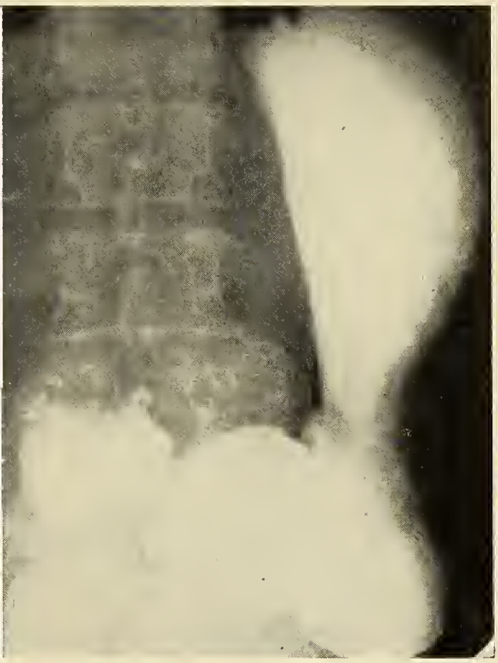

Fig. 2. Roentgenogram shows an ulcer of the lesser curvature in a patient with mesenterio-axial volvulus of the stomach.

On April 1, 1946, the right indirect inguinal hernia was repaired, and the patient was discharged from the hospital two weeks later feeling entirely well.

Summary

A case of partial gastric volvulus of the mesenterio-axial type has been described. The torsion was made possible by the presence of a mobile duodenum, permitting rotation of the lower portion of the stomach anteriorly, upward, and to the left. A benign gastric ulcer was present on the lesser curvature. Subtotal gastric resection was performed, and the operation was followed by complete relief of symptoms.

Discussion

Dr. Carl Rice: I would like to ask if Dr. Bergh would recommend gastrectomy on every volvulus of the stomach?

Dr Raymond Hedin: I would like to ask whether or not he had findings of hypertrophy of the circular or longitudinal muscle of the stomach and whether or not this might be an etiological factor?

Dr. Bergh: My experience with volvulus of the stomach has been limited, but I think gastrectomy may be a good procedure. Although some men have reported good results from simply anchoring the stomach, it seems to me that that procedure is very likely to be unsatisfactory. Patients may have recurrent trouble over a long period of time. Doctor Wangensteen has had experience with patients with recurrent volvulus of the stomach and has performed gastric resection with good results. Whether it should be done always or not, I am not prepared to say, but the risk of resection is not great, and it seems that it should produce very good results.

Our patient had no abnormal hypertrophy of the muscle of the stomach wall. The etiologic agents that have been mentioned in medical reports have been various, but the one thing that must exist before volvulus can occur is laxity of the suspensory ligaments of the stomach. A number of exciting causes have been mentioned, including hour-glass stomach, benign tumors, malignant tumors, and ulcers. In other cases such lesions have not been demonstrated at all.

A MODIFIED HALSTED BULKHEAD RECTAL ANASTOMOSIS FOR USE IN RESECTION OF CANCERS OF THE RECTOSIGMOID AND UPPER RECTUM

Inaugural Thesis

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Probably no surgeon has made more careful studies of the problems of intestinal anastomosis than W. S. Halsted. He established beyond reasonable doubt the security of the suture line to be achieved by careful serosa-to-serosa approximation without contamination of those surfaces by lumenal contents. His methods of achieving such apposition were varied, usually using pre-

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Supported by a research grant from the Graduate School of the University of Minnesota.

section sutures or other rather cumbersome methods; the Parker-Kerr method came from his laboratory in 1908. Anastomosis over paired clamps was not introduced into general usage until 1931 by Martzloff and Burget.

The method of Halsted of particular interest in connection with rectal anastomoses is his modified bulkhead procedure, by the use of which he found possible a greater degree of security than by any other method. It consists in closure of the bowel with purse-string sutures at the site of subsequent electrocautery section, apposition of the two ends of bowel, and end-to-end suture with a circular row of interrupted, silk, Halsted mattress stitches. Re-establishment of intestinal continuity was accomplished by puncturing the double diaphragm with a special shielded knife introduced per rectum.

Upon cursory examination, certain defects seem to mar the procedure. The most obvious is the large amount of tissue inverted into the lumen of the gut. Halsted's observations were supported by those of Gatch, and showed that, with use of one row of sutures, the amount of tissue which could be so inverted, without resulting obstruction, could be enough completely to fill the lumen. A second objection is related to the risk of false passage by the knife into other tissues than the double diaphragm.

In so far as I have been able to learn, there has been no published report of the use of this safest of Halsted's procedures in clinical cases.

In most parts of the gastro-intestinal tract of man, end-to-end anastomoses may readily be made by some modification of the Martzloff-Burget anastomosis. An exception to this generalization is found in the recto-sigmoid and rectum. As a result a variety of methods has been re-evaluated by Dr. Wangensteen in the recent past. Such procedures as the Hocheneg "pull-through" operation are fraught with difficulties of poor blood supply, an unclean field, and retrograde mesenteric thrombosis. Anastomosis of the bowel ends through an anoscope, in two of which I participated, is difficult and cumbersome, and the results are not wholly satisfactory.

Wangensteen concluded that any resectable lesion of the rectum more than 5 cm. above the dentate line could best be anastomosed over modified Martzloff clamps entirely from within the abdomen. The accomplishment of such anastomoses is clumsy and difficult because of the limitation in accessibility caused by the presence of clamps in a space already narrowed by the bony confines of the pelvis. Certainty of placement of sutures at the posterior end of the suture line is virtually impossible because the entire suture line cannot be visualized. In fourteen cases which he reported, Wangensteen experienced infections in the space between the anastomosis and the hollow of the sacrum in nine instances. He states that the defect in the suture line, when palpable on rectal examination, has usually been in the posterior portion thereof. In these low anastomoses, therefore, his practice has been to place a soft rubber drain through a stab wound behind the anus into this space. When drainage occurs, it is a matter of weeks before healing occurs.

The method of closure of the rectal stump in resections for ulcerative colitis, which I reported to this society last year, suggested application of the bulkhead principle to rectal anastomoses. The sawing motion of the steel wire threaded through the double diaphragm and out through a proctoscope was envisioned as a means of cutting the diaphragm more safely than by the knife. Use of this measure was quickly abandoned because the wire usually broke, necessitating use of a knife anyway. Finally, the diaphragm was opened by cutting and withdrawing both purse strings just before tying the last silk suture. The chief advantages anticipated by use of the bulkhead method were accurate and positive placement of the posterior sutures, less restricted freedom of manipulation through elimination of clamps from the pelvis, and diminished chance of spillage during the procedure.

The method, as it has recently been employed, is as follows:

The bowel is mobilized by division of the superior hemorrhoidal vessels and clearing the hollow of the sacrum to a point well below the lesion. Dissection is carried to the bowel well below the lesion and along on the longitudinal muscle for 2 to 3 cm., dividing the middle hemorrhoidal vessels if necessary. A O-chromic purse-string suture is placed on the rectum about 1 cm. above the lower limit of preparation and the ends are left long. A second purse-string is placed 1 cm. higher, and the division is made between with the cautery. Similar preparation and division are made at the apex of the sigmoid or on whatever segment is to be anastomosed to the rectum.

Prior to apposition of the closed ends of bowel, the posterior seven interrupted, Halsted mattress, silk sutures are placed so as to emerge at the very margin of the area of preparation (3-0 Deknatel). The bowel ends are now approximated by sliding the upper end down on the sutures to the rectum. These seven sutures are carefully tied. The remainder of the anastomosis lies anteriorly or laterally and can be completed under direct vision by use of eight or nine similar mattress sutures. Prior to tying the last of these, the purse-strings are cut with a slender knife blade and withdrawn altogether.

Usually one hand of the operator is now placed beneath the drapes and a No. 24 catheter on a catheter guide is passed through the anastomosis and secured in position from below. The anastomosis is extraperitonealized by flaps originally derived from the mesosigmoid. Usually 3 grams of sulfathiazole is placed beneath this peritoneal closure. In the early cases, a Penrose drain was placed extraperitoneally to the suprapubic region. This recently has been omitted.

It is with apologies that this report is presented, as this method to date has been employed on but seven cases. At first it was employed in situations in which anastomoses could with little difficulty have been performed over clamps. As the method proved uniformly successful, it was employed for progressively lower lesions. Six of the cases reported were from the Minneapolis General Hospital, and one from the University Hospitals. It is a pleasure to acknowledge the generous co-operation and suggestions of Dr. A. A. Zierold and Dr. O. J. Campbell during the development of the present procedure. Most of the difficulties were resolved by employment of the anastomosis in the experimental laboratory before trial clinically.

One death occurred, apparently from pulmonary embolus, thirty hours after operation. One patient, number 4 in the table, developed a small bowel obstruction due to leakage of a suture line in the bladder following resection of a portion of that viscus with the rectosigmoid; leakage resulted from removal of the inlying catheter by the patient eighteen hours after surgery. A catheter enterostomy was required to correct the situation. Patient number 7 developed distension and vomiting forty-eight hours following ileoproctostomy at 7 cm., after the rectal tube had accidentally been left clamped for ten hours. Despite this acid test, no leakage occurred in this or any other case.

Some of the patients were in the upper age brackets, but they seemed to do as well as the younger ones. The one death seems to have been related to a preexisting cardiac lesion.

Sulfasuxidine was given to most of these patients, but review of the charts shows that dosage was adequate in only one case.

Studies are incomplete, and this presentation is in the nature of a preliminary report.

Review of the limited experience here recorded seems to indicate certain advantages in this method of anastomosis low in the pelvis:

1. More space for manipulation is afforded by absence of clamps in the pelvis,
2. Danger of spillage incident to removal of clamps is minimized,
3. Absolute accuracy in apposition of the bowel and inversion of the mucosa is facilitated, and
4. Healing without leakage or infection of either the colic or abdominal wall wounds has been uniform (although one man died acutely of pulmonary embolism thirty hours postoperatively).

In conclusion, the present experience with this modification of Halsted's bulkhead anastomosis is in the nature of exploration of feasibility. Although it offers promise, adequate and more extended trial will be required to evaluate it fully.

TABLE I. THE BULKHEAD METHOD IN RECTAL ANASTOMOSES

Case No.	Age	Lesion	Presenting complic.	Prelim. colostomy used	Indication	Adequate sulfasux.	Level of anast.	Infection or leak.
1.—M.G.H. 7295 '44	58	AdCa	Inanition	Yes	Hemorrhage	No	13 cm.	None
2.—M.G.H. 2304 '45	79	AdCa	—	Yes	Hemorrhage	No	8 cm.	None
3.—M.G.H. 3776 '45	48	AdCa	—	No		No	10±cm.	None
4.—M.G.H. 3296 '45	83	AdCa	—	No		No	10±cm.	None
5.—M.G.H. 6885 '45	88	AdCa	Auric. ventr. block	No		Yes	18 cm.	None
6.—M.G.H. 569 '46	83	AdCa	Auric. fibril. Precord. pain	Yes	Obstruction	No	5 cm.	Died*
7.—U.H. 746052	11	Ulc. colitis		Yes	Ileostomy for 11 mon.	No	7 cm.	None†

* Patient was admitted with auricular fibrillation and precordial pain. After an apparently uneventful postoperative course for 30 hours, he died suddenly apparently of pulmonary embolism. No autopsy was permitted.

† Ileoproctostomy with resection of terminal ileum and all of colon except 7 cm. of rectum.

References

1. Dennis, C.: Ileostomy and colectomy in chronic ulcerative colitis. Surgery, 18:43, 1945.
2. Gatch, W. D.: Aseptic intestinal anastomosis. An experimental study. J.A.M.A., 59:185, 1912.
3. Halsted, W. S.: Blind-end circular suture of the intestine, closed end abutted and the double diaphragm punctured with a knife introduced per rectum. Ann. Surg., 75:356, 1922.
4. Martzloff, K. H., and Burget, G. E.: The closed intestinal loop, III Aseptic, end-to-end intestinal anastomosis and a method for making a closed loop suitable for physiologic studies. Arch. Surg., 23:26, 1931.
5. Wangensteen, O. H.: Primary resection (closed anastomosis) of rectal ampulla for malignancy with preservation of sphincteric function. Surg., Gynec. & Obst., 81:1, 1945.

Discussion

Dr. O. J. Campbell: I watched Dr. Dennis' approach to the problem of low anastomoses with a great deal of interest. I am convinced it offers decided advantages over the clamp method. It has always been my practice to use the De Martell clamp because they are applied horizontally instead of vertically as the Wangensteen clamp, thus avoiding the necessity of placing sutures in more or less blindly at the most posterior angle. On the other hand, the De Martell clamps are not entirely satisfactory, being a little bit too long for most pelves. I had thought of asking the company to make a shorter clamp and had visualized a device to enable one to rotate the clamps for ease of insertion in the posterior layer. After watching Doctor Dennis' simple application of this bulkhead operation, I believe that clamps are unnecessary. I am confident a larger series of cases will merely bear out Dr. Dennis' favorable experience with those he has reported.

Dr. A. A. Zierold: I believe this is something that is going to make possible anastomoses that heretofore have not been satisfactory. Dr. Dennis mentioned in a modest manner the shortness of his series, but if results of this series are compared with many other results, the difference is so great as to be significant. This is a most ingenious method and certainly is the simplest, safest, and most accurate method to have come to my attention.

(Continued on Page 1068)

In Memoriam

FRANK H. ALEXANDER

Dr. Frank H. Alexander, seventy-eight years old, died August 3, 1946, at his home after a long illness.

Funeral services were conducted by Montgomery Lodge A. F. & A. M. in the Listoe and Wold Chapel. Interment was in Forest Cemetery where he was buried near his long-time associate, the late Dr. Mason Allen.

Dr. Alexander was born in Charlotte, Vermont, in 1868 and studied medicine and surgery at the University of Minnesota, receiving his M.D. in 1897.

For fourteen years he served as physician and surgeon for the Great Northern Railway at Barnesville, moving to Saint Paul in 1911. From that time he practiced in Saint Paul, having offices at the corner of Rice Street and University Avenue for several years, and later moving to the Lowry Building where he was associated with the late Drs. L. M. Benepe and Mason Allen until their deaths. In late years and until his retirement in 1940, he was associated with Dr. James L. Benepe.

He was a member of the Ramsey County Medical Society, the Minnesota State Medical Association, the American Medical Association, Pierson Lodge No. 169 A.F.& A.M. of Barnesville, the Order of the Mystic Shrine and the Masonic Club of Saint Paul.

He was preceded in death by his wife, Jennie, who died two years ago. He is survived by a daughter, Mrs. R. G. Keyworth, and four grandchildren, all of Saint Paul.

Those who knew him will remember him as a good friend to all his fellow practitioners, always ready and willing to help the younger fellow. His association with the late Mason Allen, their genuine good fellowship together and undying friendship, may well have named them the Damon and Pythias of Saint Paul medical circles.

WILLIAM J. LITTLE

With the passing on July 17, 1946, of Dr. William James Little, the medical profession of Saint Paul lost one of its pioneer members in the practice of ophthalmology. Early in his career, however, he became more closely associated with educational work and school hygiene, for which he was better known and where he achieved greater recognition.

Dr. Little was born in Red Bank, Pennsylvania, on November 18, 1873, the son of John Wilder Little and Elizabeth Jane Watterson. He spent his childhood days in Nebraska, where he graduated from Hastings College, Nebraska, in 1894, with the degree of B.A., and completed his medical education at the University of Michigan in 1898, specializing in ophthalmology.

He practiced his specialty at Independence, Missouri, from 1898 to 1899; at Shelton, Nebraska, from 1899 to 1900, coming to Saint Paul in 1901. In this specialty he had the opportunity to become associated with another prominent ophthalmologist, the late J. S. Johnson, with whom he remained a short time. Shortly thereafter, the opportunity came for filling the position of a chemistry teacher in a new manual high school.

Dr. Little was well versed in the fundamentals of a classical education and the sciences, so that this position gave him the opportunity to discharge his teaching obligations in the morning and left him free to practice his specialty in the afternoon. He remained in this work until 1919, when he was appointed principal of Humboldt High School until 1921, after which he was appointed director of high schools and director of hygiene until 1932. Following this appointment, he was transferred to the principalship of Johnson High School, retiring in 1942.

Varied were his non-professional interests. He was a member of the Presbyterian Church, a Shriner and a Mason, a member of the Scottish rite, thirty-second degree, and of the Interprofessional Institute of America.

Dr. Little was also intensely interested in music. He sang with a rich bass voice, played the viola in concert and in his own quartet, and he was instrumental in organizing many high school quartets during his educational career.

In outdoor life and activities he was an ardent trout fisherman and hunter. In addition, he promoted activities of the Boy Scouts in their organization and their annual Courts of Review.

He was an active member of the Ramsey County Medical Society, Minnesota State Medical Association and the American Medical Association.

Dr. Little was married to Lillian Colter of Saint Paul in 1923. Surviving him are his wife and a daughter, Ruth, and three sisters, Mrs. William McClintock and Mrs. Anna Mae Johnson, both of Saint Paul, and Mrs. Henning Gustafson of Madison, Nebraska.

Karl Dedolph, M.D.

The National Cancer Institute's training program, designed to increase the ranks of medical specialists in diagnosis and treatment of cancer, has been accelerated through funds recently appropriated by Congress resulting in fifteen new appointments.

The training program is considered to be one of the most effective means of making better diagnostic treatment and services available for cancer patients. Although the program was begun a few months after the institute was established in August, 1937, it was curtailed during the War.

Up to July, 1946, eighty-two physicians had received the specialized training provided by the traineeships awarded by the institute. At that time, seven physicians were still in training; twenty-three new trainees went on duty during July, and the fifteen recommended for August will raise the total to forty-five. With its program currently expanding, it is expected that the total will be greatly increased by the end of the year.

The physicians spend from one to three years in training at a cancer hospital or in a hospital with a large cancer service.

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◆ Reports and Announcements ◆

MEDICAL BROADCAST FOR OCTOBER

The following radio schedule of talks on medic and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

1— 4:45 P. M.—WCCO	Visiting the Sick
2—11:00 A. M.—KUOM	Your Health is in Your Hands
3— 4:45 P. M.—WCCO	Farm Accidents
5—11:30 A. M.—KUOM-KROC-KFAM	Medicine in the News
9—11:00 A. M.—KUOM	An Erect Body is a Well-Balanced Body
9— 4:45 P. M.—WCCO	Hospital Administration as Career
10— 4:45 P. M.—WCCO	Principles of First Aid
12—11:30 A. M.—KUOM-KROC-KFAM	Medicine in the News
15— 4.45 P. M.—WCCO	The Public and Nursing
16—11:00 A. M.—KUOM	Your Feet are Your Body's Foundation
17— 4:45 P. M.—WCCO	Accident Prevention
19—11:30 A. M.—KUOM-KROC-KFAM	Medicine in the News
22— 4:45 P. M.—WCCO	Changes in the Nursing Profession
23—11:00 A. M.—KUOM	The Skin is Nature's Covering for the Body
24— 4:45 P. M.—WCCO	Bone Fractures
26—11:30 A. M.—KUOM-KROC-KFAM	Medicine in the News
29— 4:45 P. M.—WCCO	Trends in Hospital Building
30—11:00 A. M.—KUOM	Glossy Hair is Healthy Hair
31— 4:45 P. M.—WCCO	Oral Medicine

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY

The fifth annual meeting of the American Academy of Dermatology and Syphilology is scheduled for Cleveland, Ohio, from Saturday, December 7, through Thursday, December 12, 1946.

The principal sessions will be held at the Statler hotel with daily symposia at the Allerton hotel and teaching clinics at Cleveland City hospital Monday, Tuesday, and Wednesday of the convention week. There will be an extensive scientific and commercial exhibit held in connection with the meeting, which will feature special lectures by members of the Academy and by famed authorities in such other fields as atomic energy, radiology, and surgery.

The Academy is chiefly concerned with teaching and in consequence the entire session will be a sort of "postgraduate" seminar for the visiting physicians from all parts of the United States and Canada. The annual banquet will be held Wednesday night of the convention week. Dr. Harold M. Cole of Cleveland is general chairman for local arrangements.

There will be special courses given in dermatopathology, mycology, x-ray and radium therapy, medical photography, industrial dermatoses, tuberculides, sarcoid and leprosy; drug eruptions, bacteriology of the skin, and mucous membrane diseases.

Subjects for symposia will include pharmaceutical therapy, syphilis, x-ray and radium therapy, hormones in dermatology, physical therapy, diagnosis and treatment of ringworm, dermatopathology round table, physiology and chemistry of the skin, allergy, and the psychosomatic factor in skin diseases.

Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, New York, is secretary of the Academy.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association was held in the auditorium of Shattuck Military Academy in Faribault on September 9. At the scientific sessions held from nine to twelve noon and two to five p.m., papers were presented by Drs. Paul R. Lipscomb, John L. Morgan, Louis E. Prickman, Louis A. Brunsting, Charles R. Watkins, Byron E. Hall, George B. Eusterman, Waltman Walters and Wallace E. Herrell, all of Rochester. Drs. Joseph C. Michael and S. S. Ramsdell, of Minneapolis, reviewed and analyzed the 152 cases of poliomyelitis treated at the Minneapolis General Hospital in 1944. Case reports were made by Dr. George B. Eusterman, Rochester; Dr. Peter Hermanson, Hendrick; Dr. Harvey O. Skinner, Saint Paul, and Dr. Arthur Benjamin, Minneapolis.

Election of officers was held during the luncheon period in the Shattuck refectory. The concluding event of the meeting was a banquet at 6:30 at the Hotel Faribault. Addresses were given by Dr. Edwin J. Simons, Swanville, president of the Minnesota State Medical Association;; Dr. Carl B. McKaig, Pine Island, president of the Southern Minnesota Association, and Dr. E. J. Baldes, of Rochester, who spoke on "Germany Today."

General arrangements were in charge of Drs. Charles M. Robilliard, Frederick R. Huxley and Paul F. Meyer. Shattuck School arrangements were made by Drs. Carl W. Rumpf and Paul H. Weaver. Other committees were: banquet and luncheon, Drs. Frank W. Stevenson, Carl A. Traeger, and Norman Lende; transportation, Drs. Arthur W. Nuetzman, Donald J. Studer and Joseph O. McKeon; reception, Drs. Frederick U. Davis, Adolph M. Hanson and William H. Rumpf.

RESEARCH GRANT FOR STUDIES ON BRUCELLOSIS

A research grant of $10,000 a year for three years has been made available to the Department of Medicine at the University of Minnesota Medical School by the United States Public Health Service for studies on brucellosis. This research project is under the direction of Dr. Wesley W. Spink, Professor of Medicine. Associated with him are Dr. Wendell H. Hall and Dr. A. I. Braude. Investigations are under way in an attempt to clarify the pathogenesis of brucellosis in human beings and a clinical and experimental evaluation of thereapeutic agents. In addition, epidemiological studies are being extended. Those in charge are ready to assist physicians throughout the state in any problems they may encounter with the disease.

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Calories per ounce	14	15	17	15	14
Crude Fibre %	0.15	0.29	0.30	0.22	0.43
Calcium %	0.026	0.013	0.046	0.046	0.024
Phosphorus %	0.042	0.065	0.068	0.068	0.051
Iron Mg. per 100 g.	.22	.72	.35	.40	.73
Copper Mg. per 100 g.	.24	.35	.12	.17	.24
Manganese Mg. per 100 g.	.075	.173	.054	.053	.018
Vitamin A—I. U. Per 100 g.	1766	7000	1130	1693	2550
Thiamine Mg. per 100 g.	.018	.080	.036	.037	.069
Riboflavin Mg. per 100 g.	.040	.62	.068	.072	.064
Ascorbic Acid Mg. per 100 g.	1.1	7.3	2.7	3.9	7.5
Niacin Mg. per 100 g.	.77	1.54	1.22	1.29	1.05

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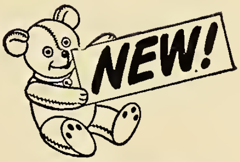

LOOK FOR THE RED-AND-WHITE LABEL

✦ Of General Interest ✦

Dr. Ellsworth A. Thayer, formerly of Truman, has announced the opening of his offices in Fairmont.

* * *

Dr. Arthur W. Eckstein, formerly a member of the staff at the State Hospital at Faribault, has entered private practice at Grand Meadow.

* * *

The cornerstone of the new Heise Clinic in Winona has been laid, and the work on the structure is reported as progressing favorably.

* * *

Dr. Charles M. Jessico, Duluth, has been discharged from service in the USNR and has resumed his practice of neuropsychiatry at the Duluth Clinic.

* * *

Dr. Francis J. Pelant, formerly in practice at New Ulm, has assumed his duties at the State Hospital in St. Peter.

* * *

Dr. Frederick Huxley, Dr. Donald Studer, Dr. Arthur W. Nuetzman and Dr. Frederick Davis, Faribault, attended the institute on the Kenny Treatment for polio held at the Michael Dowling School in Minneapolis.

* * *

Dr. Lawrence J. Kaasa, who has been in practice in Albert Lea for the past twenty years, has accepted a position with the Veterans Administration in Washington, D. C.

* * *

Drs. Otto B. Fesenmaier and Dr. Theodore F. Hammermeister, of New Ulm, attended the two-day polio clinic sponsored by the National Foundation for Infantile Paralysis in Minneapolis.

* * *

Charity Hospital, New Orleans, Louisiana, has awarded a scholarship to Dr. Kenneth Bray, of Biwabik. Since his discharge from military service, Dr. Bray has been assisting at the Bray hosiptal at Biwabik.

* * *

Dr. Viktor O. Wilson, of the Minnesota Department of Public Health, University of Minnesota, was guest speaker at a mass meeting at Fosston to promote establishment of a permanent hospital in East Polke County.

* * *

Dr. Morrill E. Withrow, city health officer of International Falls, attended the conference of national health officers held in Minneapolis for discussion of the polio outbreak in the State.

* * *

Dr. P. Theodore Watson, who was recently deactivated from the Navy Medical Corps, has entered the practice of obstretrics and gynecology in association with Dr. Bernice Moriarity and Dr. Norbert J. Lilleberg at 1034 Lowry Medical Arts Building, Saint Paul.

Dr. Harold W. Havel, Jordan, has moved his offices from the Hotel Jordan to the Snyder Building on Water Street, where he is occupying the former offices of Dr. William H. Phillips.

* * *

Faribault doctors who attended the polio clinic held at the University of Minnesota included Drs. Charles M. Robilliard, Paul Weaver, Carl W. Rumpf, Carl A. Traeger and Paul F. Meyer.

* * *

Dr. W. D. Haufe has entered general practice at Eveleth. Dr. Haufe is a graduate of the University of Wisconsin School of Medicine and a veteran of the last war, where he took part in four major campaigns.

* * *

Drs. Earl C. Elkins and Frank Krusen, Mayo Clinic, Rochester, have been in New York, where they attended the meeting of the American Congress of Physical Therapy and the Baruch Conference on Physical Medicine.

* * *

Dr. Ernest E. Mariette, superintendent of Glen Lake Sanatorium, Hennepin County participated in the Study of Tuberculosis Control—a United States Public Health Service training course—held recently at the University of Minnesota.

* * *

Dr. H. Worley Kendell, of the Mayo Clinic, was chosen president-elect of the American Congress of Physical Medicine at the 24th annual meeting of the organization held in New York City in September. Dr. Kendell will take office in September, 1947.

* * *

Dr. Frederick J. Kottke, research fellow in physiology, and Dr. Herbert S. Wells, professor of biophysics, at the University of Minnesota, were guest speakers at the first postwar meeting of the Congress of Physical Medicine, held in New York City, September 4 to 7.

* * *

Charles Lovelace, three-year-old son of Dr. William R. Lovelace, of the Mayo Clinic, died of infantile paralysis at Warm Springs, Georgia, on August 13 1946. Another son, William R. Lovelace, III, aged six, died of the same disease in Rochester on July 8.

* * *

Announcement has been made of the appointment of Dr. George L. Joyce as coroner of Olmsted County for the unexpired term of Dr. John E. Crewe, of Rochester who has resigned because of failing health. Dr. Joyce will carry on the duties of the office until a successor has been elected in the November elections to take over on January 1. Dr. Joyce is not a candidate.

(Continued on Page 1060)

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(Continued from Page 1058)

Jay C. Hormel has pledged $15,000 for the first year's operation of a research fellowship in heart disease and rheumatic fever, a project sponsored by the Minnesota American Legion. Their plan calls for a fund of $300,000, but Mr. Hormel's gift makes it possible to begin functioning immediately.

* * *

According to a recent announcement issued by James Baker, executive secretary of the Hennepin County Medical Society, about 170 of the 175 Minneapolis physicians in military service have resumed their practices. Lack of adequate office accommodations, however has necessitated considerable "doubling up."

* * *

Mr. and Mrs. M. R. Walker, Saint Paul, announce the marriage of their daughter, Betty Jane, to Dr. Sherman W. Schultz, Jr., at Calvary Lutheran Church in Hamline on Saturday evening, August 24, 1946.

Dr. Schultz is the son of Mr. and Mrs. S. W. Schultz, 288 South Saratoga Avenue, Saint Paul.

* * *

Dr. Louis W. Wittrock, of St. Cloud, has purchased the practice and hospital of the late Dr. Frank T. Brigham in Watkins. Dr. Wittrock is a graduate of St. John's University and Marquette University School of Medicine, and has done postgraduate work at the University of Minnesota. He was recently released from the Navy where he had served for three years with the rank of lieutenant commander.

* * *

Dr. A. D. Rydlan of Minneapolis has joined the staff of the Northwestern Clinic at Crookston. Dr. Rydlan, who is a graduate of St. Olaf's College and Marquette University was recently released from the Navy, where he had served as ship's surgeon. He was formerly engaged in specializing in nervous and mental diseases and was a member of several hospital staffs in Milwaukee, Wisconsin.

* * *

Dr. G. Arvid Hedberg, director of Nopeming Sanatorium, suffered minor injuries in a fire which destroyed his summer home at Chub Lake.

Wakened by the smell of smoke, Mrs. Hedberg aroused the household which at the time consisted of Dr. and Mrs. Hedberg, their two children, Susan, nine, and Karen six, and five guests, all of whom were given shelter at the homes of friends about a half-mile distant.

* * *

The American Red Cross will continue to supply personnel for the overseas clubs for occupational troops. Of the 3100 Red Cross workers still in foreign service, more than half are engaged in club and recreational service. The Army supplies quarters and maintenance personnel. These clubs are available to dependents of servicemen and overseas War Department personnel The cost of this program for the Red Cross will total $16,272,000 for the fiscal year.

(Continued on Page 1062)

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(Continued from Page 1060)

Dr. Asher T. White, Minneapolis, who was one of the 240 scientists and physicians in the radiological safety section at the Bikini bomb tests, has returned home. In an interview Dr. White, the only Minneapolis man on the project, said that the Geiger counter measured radioactivity with such accuracy at Bikini that not one of the 40,000 men engaged in "Operations Crossroads" was injured by gamma rays, the destructive action of which had been so feared.

* * *

Dr. Bernice A. Nelson has opened offices for the practice of medicine in Northome. Dr. Nelson graduated from University of Minnesota School of Medicine in 1943. She served her internship at the Minneapolis General Hospital, where she also had a fellowship for eighteen months. More recently she was associated with Dr. James H. Bender at the hospital in Bigfork, and for several weeks prior to locating in Northome she was engaged in special study of polio in Minneapolis.

* * *

Because of the polio outbreak the celebration in honor of Dr. William W. Will, in recognition of his forty years of continuous service to the community of Bertha, originally scheduled for September 8, was held on September 22. Starting at noon with a parade, an open air program was presented at the city park. The speakers included Governor Edward J. Thye and Dr. Edwin J. Simons, of Swanville, president of the Minnesota State Medical Association. A reception at the high school followed the program in the park and old friends and new presented their felicitations to Dr. Will.

* * *

Dr. William Wandell Johnstone who has been associated with the Bratrud Clinic at Thief River Falls pending departure for the mission field, has gone to Okoboji, Iowa, for conference with the Sudan Interior Mission Board prior to departure to a leper hospital in Nigeria, West Africa.

Both Dr. and Mrs. Johnstone, who is accompanying her husband, are graduates of Wheaton College, Wheaton, Illinois. Dr. Johnstone took his medical degree at Northwestern University, Chicago.

* * *

"Operation C-X for Health," the first project of the kind in the world in a large city, will begin functioning in Duluth in November. "Operation-X," meaning "Chest X-Rays," will be conducted jointly by the Duluth City Health Department, the St. Louis County Tuberculosis and Health Association and the Nopeming Sanatorium and will be the largest single x-ray tuberculosis survey ever undertaken and the first instance of mass radiography in a metropolitan center with a mobile laboratory.

* * *

Dr. Albert J. Chesley, head of the State Health Department, has announced Colonel Herbert M. Bosch as successor to Harold A. Whittaker, sanitation division

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director. Colonel Bosch, public health engineer in the division of sanitation, who recently returned from military service, had been with the department for ten years at the time of his enlistment.

Mr. Whittaker has been made head of the public health engineering section of the School of Public Health at the University of Minnesota.

* * *

A sudden heart attack has sent Dr. Henry C. Doms, of Slayton, as a patient to his own hospital, where he must remain in bed for not less than six weeks of complete rest on orders of Drs. Arthur C. Kerkhof and Norman Nelson, heart specialists of Minneapolis, who corroborated an earlier diagnosis made by Dr. Roy Pierson, of Slayton. Overwork during the war years is said to have caused Dr. Dom's attack, or as he explains it "The old ticker just couldn't take it any more."

* * *

Dr. Christopher Graham, of Rochester, was the "Big Little American" recently singled out for special honor by Morton Downey, popular singer on the Mutual Broadcasting system. The salute to Dr. Graham, who celebrated his ninetieth birthday on April 3, was carried over an international network that extended to Bermuda, Trinidad and Alaska.

A member of the Mayo Clinic until he retired at sixty-three, Dr. Graham has since devoted himself to interesting the youth of his community in agricultural pursuits and to studying the problems confronting farmers of the State.

Dr. Peter Boysen has sold his hospital at Pelican Rapids to Dr. Henry A. Korda, of Foley, and Dr. Howard Kaliher, of St. Cloud. The new owners are both graduates of the University of Minnesota Medical School and have been in practice in their respective localities. Dr. Kaliher was a member of the Medical Reserve and Dr. Korda was just recently discharged from military service.

Dr. Boysen opened his hospital two years after entering practice at Pelican Rapids in 1911. Other than taking a lengthy vacation, Dr. Boysen's future plans are indefinite.

* * *

Dr. and Mrs. John E. Soper, Minneapolis, celebrated their golden wedding anniversary on September 16 with open house for their friends at the Dude Room of the Covered Wagon.

A native of England, Dr. Soper is a veteran of World War I, past commander of the Minnesota Chapter of the Disabled American veterans, past commander of the Order of the Purple Heart and a member of Peterson Post of the American Legion. Prior to his retirement from practice, Dr. Soper was a member of the medical staff at the Veterans' Hospital, Fort Snelling.

* * *

Dr. Ralph S. Armstrong, of Winnebago, is now located in his new office building which has been under construction for some months. Since coming to Winnebago, Dr. Armstrong has been assisting local physicians

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because lack of office space prevented establishing his own office.

Dr. Armstrong, who is a graduate of the University of Minnesota School of Medicine, entered military service immediately following the completion of his medical course. He was on assignment in the South Pacific for three years and just prior to the end of the war was transferred to the Army Aviation Hospital at St. Petersburg, Florida.

* * *

Dr. Sidney C. Stenerodden, of Grand Forks, North Dakota has joined the St. Cloud Clinic. Dr. Stenerodden recently returned to civilian practice after three and a half years of military service in the Pacific Theatre. A major, he was awarded the Bronze Star, the Presidential Unit Citation Ribbon and the Combat Medical Badge. Since his release from service last April, he has been in residence at the Fairview Hospital in Minneapolis.

Dr. Stenerodden is a graduate of Rush Medical College, Chicago, and he interned at Ancker Hospital in Saint Paul.

* * *

Dr. Roger J. Burkhardt, whose home was in Chaska until he became associated with the Mayo Clinic in 1940, has announced the opening of offices for the practice of dermatology and syphilology in the Physicians and Surgeons Building in San Jose, California.

Dr. Burkhardt took his medical degree at the University of Minnesota in 1938 and was in the Department of Dermatology and Syphilology from October, 1940, until July, 1944, when he entered the United States Public Health Service and was placed in charge of Rapid Treatment Centers for Veneral Disease at San Antonio, Texas, and Charlotte, North Carolina.

* * *

Dr. Arthur E. Walker, Saint Paul, who was released from military service in April of this year, is now associated in practice with Dr. Harold J. Prendergast in offices at 768 Lowry Medical Arts Building. Before entering the Army Medical Corps, where he held the rank of major, Dr. Walker was located at 867 Grand Avenue. Following his induction in January, 1944, he was assigned to the Umatilla Ordnance Depot at Hermiston, Oregon, where he remained for the greater part of his time in service. Later he was made post surgeon at the Prisoners of War Camp in Algona, Iowa.

Dr. Walker graduated from Marquette University Medical School in 1931 and interned at St. Joseph's Hospital in Saint Paul.

* * *

Dr. John F. Schmid, formerly of Worthington, is now associated in practice with Dr. Kenneth W. Covey at Mahnomen. Dr. Schmid, a 1941 graduate of the University of Minnesota College of Medicine, served his internship at King's County Hospital in New York City. He entered military service in December, 1942, and was a major when discharged in August of this year. His assignment areas included the British West Indies, where he attended the Duke of Windsor, and Canadian Alaska. In February, 1944, he was assigned to the U. S. General Hospital at Camp Carson, Colorado

Springs, Colorado, where he participated in a special study of trench foot. While at Camp Carson, Dr. Schmid served as chief of the section on skin diseases and was later made chief of the section on tropical diseases. He was cited for his work in malaria and received the Army Commendation award.

* * *

Dr. Theodor E. Bratrud, who has been engaged in postgraduate work at the University of Minnesota School of Medicine for the past six years has joined his father, Dr. Edward Bratrud in the Bratrud Clinic at Thief River Falls.

Dr. Bratrud, a graduate of Marquette University School of Medicine, served his internship at the Milwaukee County General Hospital. His postgraduate work at the University of Minnesota brought him the degree of M.S. in pathology. During the past year he has been associated with his uncle, Dr. Arthur Bratrud, of Minneapolis. He was also clinical instructor in surgery at the University.

* * *

Work on the Delmore Clinic Building at Roseau has progressed far enough to permit occupancy of the offices on the first and second floors, but it will be some weeks before remodeling has been completed. Originally the Farmers and Merchants State Bank, it was purchased by Dr. John L. Delmore, Sr., for clinic purposes after the bank closed about a year ago. Alterations were started early last spring. Offices, x-ray room and laboratory are modern in every detail, and everything possible has been incorporated in the remodeling which will contribute to the comfort and convenience of the patients.

Dr. Delmore and his sons Dr. John L., Jr., and Dr. Robert, are associated in the clinic operation.

* * *

Dr. Albert Olson, formerly of Cloquet, who was recently discharged from military service, has entered practice in association with Dr. Dewey E. Morehead at Owatonna. Following his graduation from the University of Minnesota Medical School, Dr. Olson took advanced training at the city hospital in San Francisco prior to entering the Army. He went overseas with the 96th Infantry Division and participated in the Leyte and Okinawa campaigns. Later he was assigned to the Fourth General Hospital at Fort McKinley, Manila, in the internal medicine and dermatology sections. In April, he returned to this country with a planeload of patients and was later discharged at Camp Beale, California, with the rank of major. Dr. Olson was awarded the Philippine Liberation Medal with two stars, the Asiatic Pacific Ribbon and Bronze Arrowhead, the Victory Ribbon and the Bronze Star Medal.

* * *

Henry W. Morris, head of the medical photography laboratory at the University of Minnesota, has been elected a fellow of the Biological Photographic Association, one of three specialists awarded the first fellowships ever given in this field. Mr. Morris, who has been taking pictures of patients for doctors for the past thirty-eight years began his work at the old free dispensary on Washington Avenue after having been employed there

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One-week Course in Thoracic Surgery, starting October 21 and November 25.

GYNECOLOGY—Two-week Course, starting October 21.
One-week Personal Course in Vaginal Approach to Pelvic Surgery, starting November 25.

MEDICINE—Two-week Intensive Course, starting October 21.

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in a sort of general utility capacity for two years. He was sent to the Eastman Kodak Company to "learn a little about taking pictures," and a year later took the first color plates of microscopic specimens, working with Dr. Charles Mayo. In discussing his work, Mr. Morris said that the rapid development of photomicrography in the past fifteen years has made it an indispensable tool of research.

* * *

Drs. Truman A. and Homer H. Hedemark who recently moved to Ortonville from Thief River Falls, are now located in their new offices in the Shumaker Building. The Doctors Hedemark, who are brothers, both took their premedical work at the University of Minnesota and their medical degrees at the St. Louis University Medical School.

Dr. Truman Hedemark, following his graduation from medical school in 1925, interned at Ancker Hospital in Saint Paul, and served as city doctor for Saint Paul and county health officer for Ramsey County for three years. Later he was in practice for several years at Revillo, South Dakota, and at the same time was a member of the staff of St. Bernard's Hospital at Milbank. Specializing in obstetrics and pediatrics, he joined the Bratrud Clinic at Thief River Falls and served on the staff of St. Luke's Hospital there. He is a veteran of World War I and active in the American Legion.

* * *

Dr. Homer Hedemark took his medical degree in 1933 and interned at Ancker Hospital. He was engaged in general practice at Marietta for about a year and a half before joining the Bratrud Clinic, where he has been chief surgeon for the past three years.

* * *

Dr. George T. VanRooy has joined the Bratrud Clinic at Thief River Falls. A 1941 graduate of the University of Minnesota Medical School, Dr. Van Rooy was in military service for more than three years. His assignments include the Station Hospital at Salt Lake City and the 181st General Hospital in India. Following his graduation from the School of Military Neuropsychiatry, he was assigned to work in this field at Mason General Hospital and on the U. S. Hospital Ship, *Stafford*. He was discharged early in the year with the rank of captain, and has since been doing special work in medicine and surgery at the University of Minnesota.

After forty-four months in the Army Air Forces, where he was a major, Dr. Theodore W. Stransky has reopened his offices in Owatonna. While in service Dr. Stransky attended the School of Aviation Medicine at Randolph Field, Texas, and the advanced surgeons' school at Orlando, Florida, where he received the rating of flight surgeon. His duties took him to Jefferson Barracks, Missouri, the San Antonio Aviation Cadet center and the Muroc Test Base in California. Since his return from service he has done postgraduate work at the Mayo Clinic, the Children's Hospital in Milwaukee, the University of Minnesota and the University of Chicago.

Colonel John M. Caldwell, MC, has been appointed successor to Brigadier General William C. Menninger as chief of the Neuropsychiatry Consultants Division, U. S. Army. Dr. Menninger was separated from service on June 27.

Colonel Caldwell was a fellow at the Mayo Clinic from October, 1929, to December, 1932, specializing in neurology and psychiatry. He received an M.S. degree in medicine from the University of Minnesota in 1932. Shortly afterward he entered the Army Medical Corps with the rank of lieutenant and his subsequent assignments included the Corzal Hospital in the Canal Zone, where the majority of the patients are mental cases and St. Elizabeth's Hospital, District of Columbia. While at the latter hospital Colonel Caldwell was accredited by the American Board of Psychiatry and Neurology.

In 1941 he was assigned to the neuropsychiatry section at Walter Reed Hospital, Washington, D. C., and was later made chief of the section. He was at the Medical Department Replacement Center at Camp Robinson, Arkansas, for two months, after which he supervised the activation of the 54th General Hospital at Camp Ellis, Illinois, on May 25, 1943, and accompanied it to New Guinea and from there to the Philippines. In the fall of 1945 the hospital was established in Tokyo. Deactivated in December, 1945, the staff continued operation as the 27th General Hospital with Colonel Caldwell as commanding officer.

Colonel Caldwell returned to this country on March 1 of this year and was assigned to understudy General Menninger.

* * *

Lieutenant Philip E. Rostad, of Moorhead, has reported for active duty in the Army Medical Corps and is engaged in an eight weeks' basic training cuorse at Brooke Army Medical Center, Fort Sam Houston, Texas. Lieutenant Rostad is a graduate of the University of Minnesota School of Medicine.

Dr. Frederick J. Vollmer, eye, ear, nose and throat specialist, who was in practice at Grand Forks, North Dakota, before entering military service more than five years ago, has joined the Winona Clinic. Dr. Vollmer went overseas in February, 1944, with the 97th General Hospital as chief of the eye, ear, nose and throat section and was stationed at Oxford, England, for four months. From there he was assigned to the London area for a year, where he treated many well-known persons, including Winston Churchill, and the exiled King Peter of Yugoslavia. Later he was made chief of the eye, ear, nose and throat section of the 129th General Hospital at Wrexham, North Wales, which was the maxillofacial plastic center for fourteen hospitals in North Wales.

Returned to this country in August, 1945, he was on assignment at the Walter Reed General Hospital in Washington, D. C., from the following October until April, 1946, when he received his terminal leave.

A graduate of the University of North Dakota and Rush Medical College, Chicago, Dr. Vollmer has been in practice since 1934. He served his internship at St.

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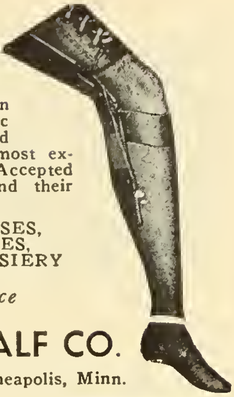

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Barnabas Hospital in Minneapolis and did postgraduate work at Rush and the Illinois Research Hospital in Chicago.

* * *

HOSPITAL NEWS

Cecelia Hauge, chief nurse at the University Hospitals, has been made chief of the nursing section in the department of medicine and surgery, Veterans Administration, at Fort Snelling.

Miss Hauge graduated from the Minnesota School of Nursing in 1929 and was appointed superintendent of nurses at the University Hospitals in 1935. Immediately after the declaration of war, she joined the Army Nursing Corps and went overseas with the 26th General Hospital Unit in October, 1942. She returned to this country in May, 1945, and was assigned as chief nurse at the Cushing General Hospital in Framingham, Massachusetts, where she remained until rejoining the staff at the University Hospitals last January.

* * *

Dr. John S. Siegel of Virginia has been appointed a director on the advisory council of the National Jewish Hospital at Denver. Founded in 1899, the hospital is the first free non-sectarian, nation-wide institution for the care of tuberculous patients in this country. As a director, Dr. Sigel will assist in the formulation of policies.

MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 1053)

Dr. John R. Paine: How much of a diaphragm is left at the site of anastomosis in these cases?

Dr. Martin Nordland: To what kind of lesion is this most applicable, what is the purpose of the low procedure, and what are the aftereffects as far as recurrence is concerned?

Dr. Dennis: With regard to the matter of the size of the diaphragm, a good deal of tissue is inverted into the bowel. On one or two that we have looked at over variable periods, we have found that the stoma looks small through the anastomosis, but the inverted bowel forms a partial diaphragm around this stoma and is very free and like a veil, and it does not look as though it would interfere with the passage of material. Material seems to go by satisfactorily. A great deal less tissue is left inside the lumen of the bowel than in the "pull-through" operation, where one has a length of intestine 3 to 4 cm. long left inside the lumen of the bowel.

With regard to the type of lesion for which this sort of resection is in order, that question has been very beautifully discussed in Dr. Wangensteen's paper on "Low Recto-Sigmoid and Rectal Resections." He is inclined to feel that the lesion that goes within 5 cm. of the anus or the type that involves the levator muscles is probably not susceptible to resection by this type of procedure.

This operation interests me not so much for carcinoma as for resections for chronic ulcerative colitis. Here these anastomoses have to be made very low sometimes to find mucosa nearly normal enough to leave.

Ernest R. Anderson, M.D.
Recorder

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

Operative Gynecology. Richard W. Te Linde, M.D. Professor of Gynecology, John Hopkins University, and Chief Gynecologist, Johns Hopkins Hospital. 751 pages. Illus. Price, $18.00, cloth. Philadelphia: J. B. Lippincott Co., 1946.

The Chest—A Handbook of Roentgen Diagnosis. Leo G. Rigler, M.D. Professor and Chief, Department of Radiology, University of Minnesota. 352 pages. Illus. Price, $6.50, cloth. Chicago: Year Book Publishers, 1946.

Harvey Cushing—A Biography. John F. Fulton. 754 pages. Illus. Price, $5.00, cloth. Springfield, Illinois: Charles C. Thomas, 1946.

DISEASES OF THE RETINA. Herman Elwyn, M.D., Senior Assistant Surgeon, New York Eye and Ear Infirmary. With 170 illustrations, nineteen in color. 587 pages. Price $10. Philadelphia: The Blakiston Company, 1946.

This is the first new book devoted entirely to retinal disturbances since the work of Leber in 1915 and 1916.

It presents excellent detail in pathological descriptions. The section on diseases of the retina resulting from circulatory disturbances is especially interesting. This book is recommended for the internist as well as for the practicing ophthalmologist.

Frank Adair, M.D.

HUMAN EMBRYOLOGY. Bradley M. Patten, Professor of Anatomy, University of Michigan Medical School. 776 pages, illustrated. Price, $7.00. Philadelphia: The Blakiston Co., 1946.

This seven hundred-page book, in which the author has brought out a very comprehensive outline of this most important fundamental medical science, human embryology, is a valuable addition to any medical library. Much of the comparative and theoretical material has been omitted, because as the author points out, the medical student in his pre-medical course has covered the comparative studies. The author urges the importance of the study of embryology to the student in medicine. When the student finds himself deeply engrossed in anatomical detail, he will realize the need of knowing the embryological fundamentals: how the adult structure came to be as it is, whether normal or abnormal, what the developmental processes were that brought about any present malformation, and what effect may be expected on the welfare and future health of the individual. Upon this knowledge, often, is based consultation opinion.

Congenital anomalies are shown in detail because of their clinical importance. Time-lapse motion pictures clearly demonstrate ovulation in a rabbit. Maturation is described in great detail in studies on the human. Several of the illustrations of the very early human embyro are photographs of specimens from the Carnegie collection. The author has painstakingly prepared serial sections with detailed descriptions of the embryonic structure. Photomicroscopic time-lapse pictures show early cell division in a fertilized monkey ovum that was washed from the tube and then cultivated in plasma. Similar photographs demonstrate the morula and blastula stages in the rabbit. The text shows excellent photomicrographs of double monsters developing in chicks, and there are extensive drawings of the various types of conjoined twins. No effort has been spared to illustrate this book with a profuse number of drawings which, together with extremely readable English, make the text very applicable to the student in medicine or the practicing physician who has retained an interest in embryology.

F. C. Schuldt, M.D., F.A.C.S.

BACTERIOLOGIST RECEIVES GORGAS MEDAL FOR SERVICE

Brigadier General Raymond A. Kelser received the 1946 Gorgas Medal, sponsored by Wyeth Incorporated of Philadelphia, and awarded by the Association of Military Surgeons of the United States for outstanding work in preventive medicine for the armed forces. During World War II General Kelser served as director of the Veterinary Division of the Surgeon General's Office of the U. S. Army and did prominent work in eradicating rinderpest, a cattle disease, in the Philippine Islands, enabling the Filipinos to have their own domestic milk supply. General Kelser is now dean of the College of Veterinary Medicine and professor of bacteriology at the University of Pennsylvania.—*Science News Letter*, October 19, 1946.

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CHRONIC SUPPURATIVE OTITIS MEDIA

(Continued from Page 1004)

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When the technique is carefully followed it would seem to have distinct advantage in the tympanomastoidectomy over the classical postaural route.

References

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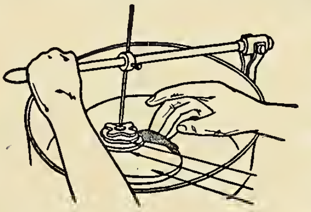

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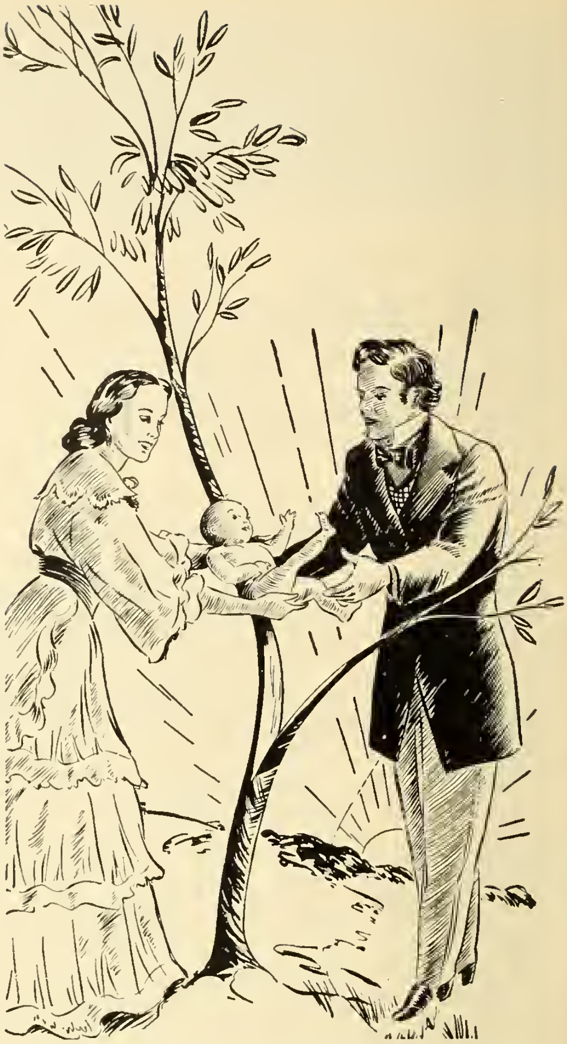

It is ironical that the practice of attempting to cure rickets by holding the child in the cleft of an ash tree was associated with the rising of the sun, the light of which we now know is in itself one of Nature's specifics.

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*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1928

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Volume 29 **November, 1946** **No. 11**

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[1] *Montgomery, J. B.: M. Clin. North America 29:205 (Nov.) 1945.*

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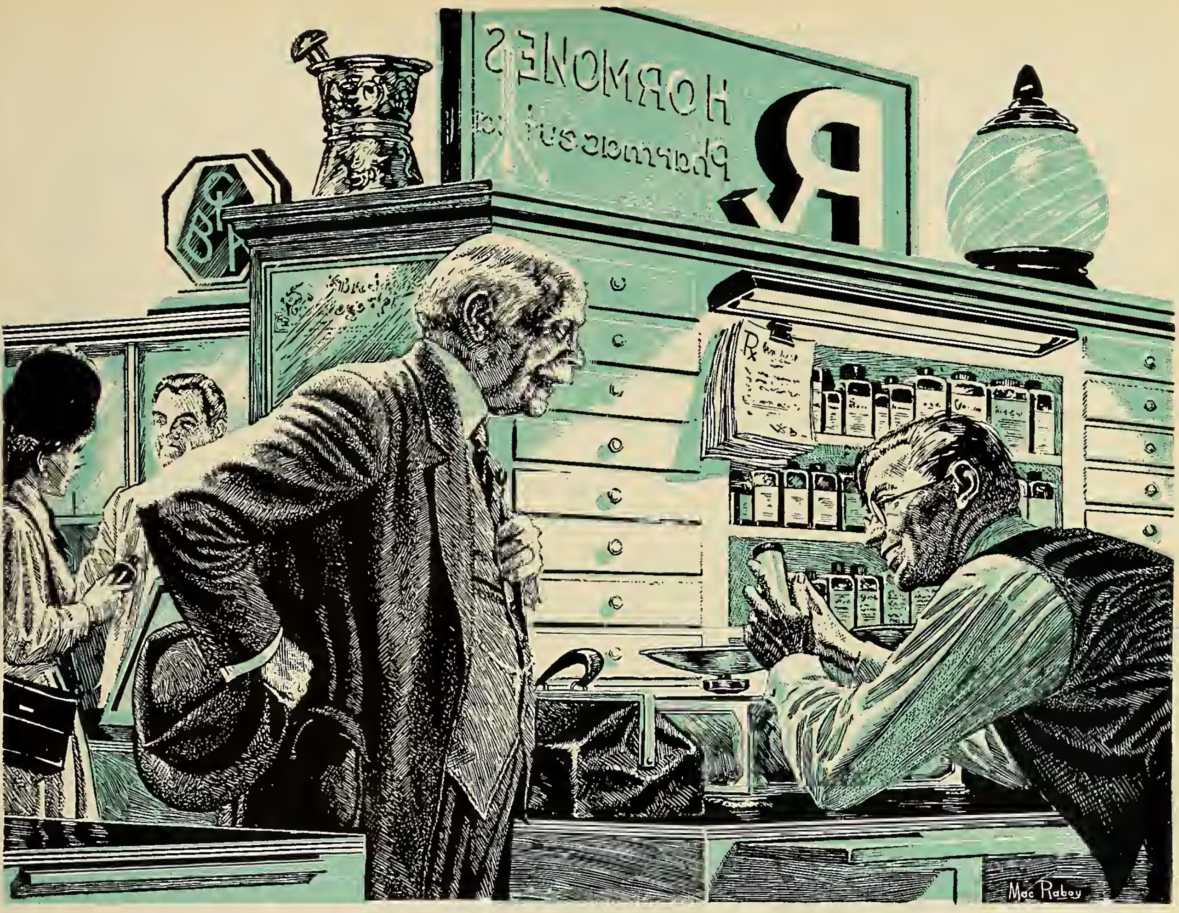

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*Stare, F. J., and Thorn, G. W.: Protein Nutrition in Problems of Medical Interest, J. A. M. A. *127*:1120 (April 28) 1945.

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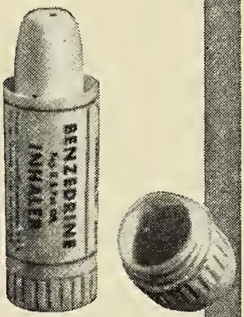

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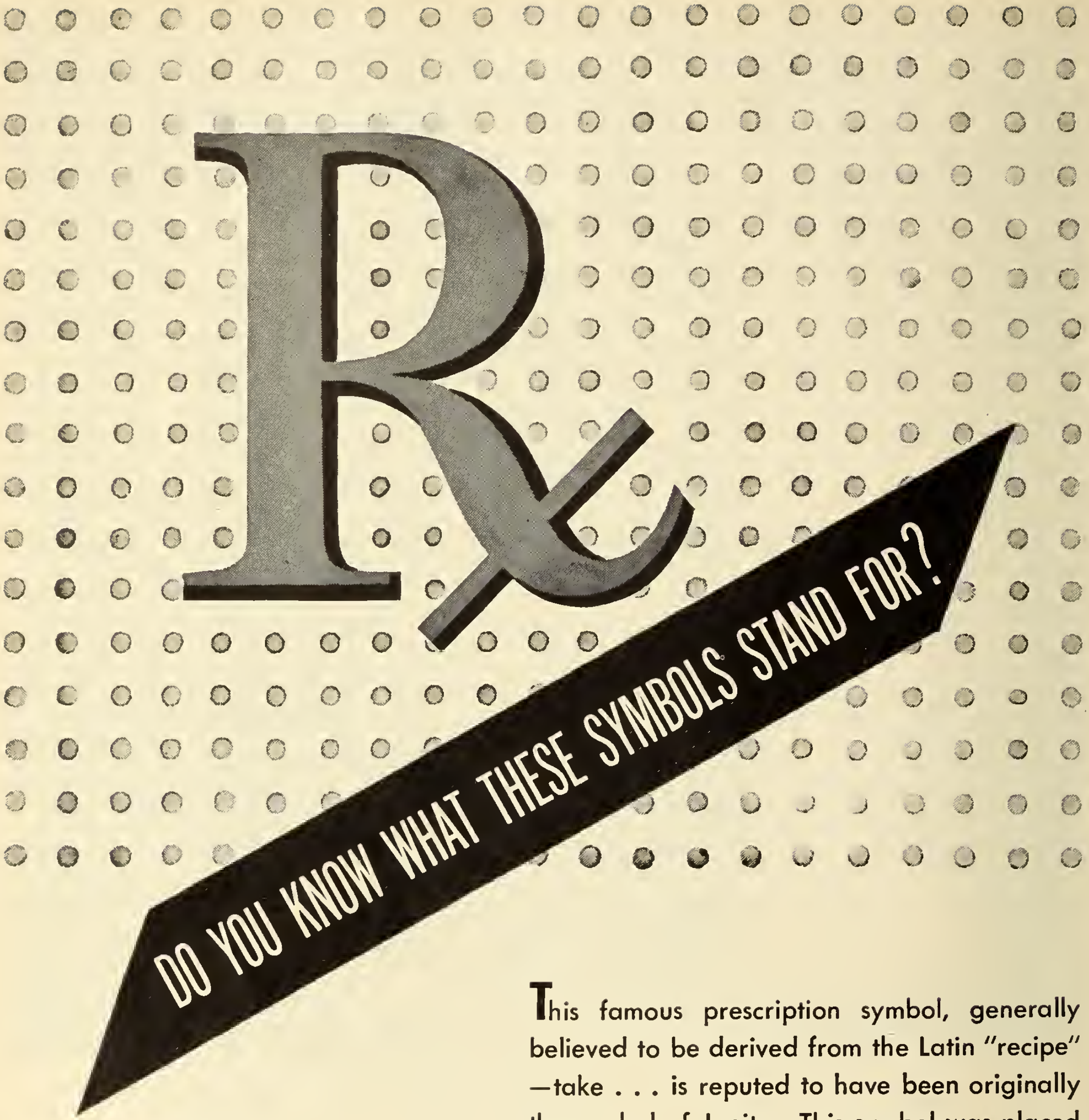
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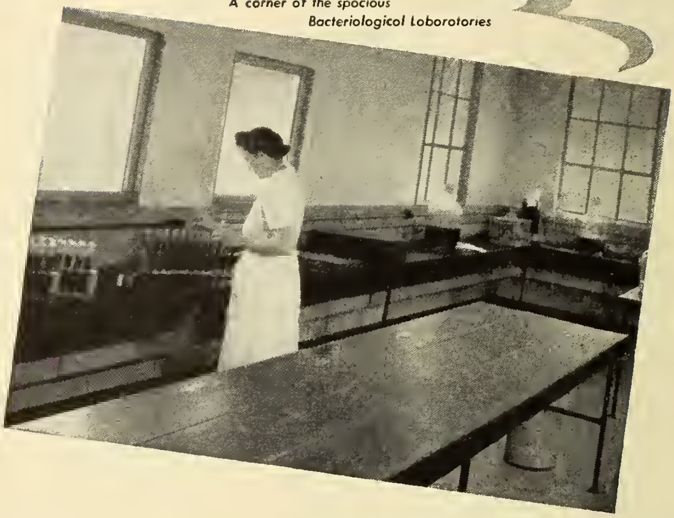

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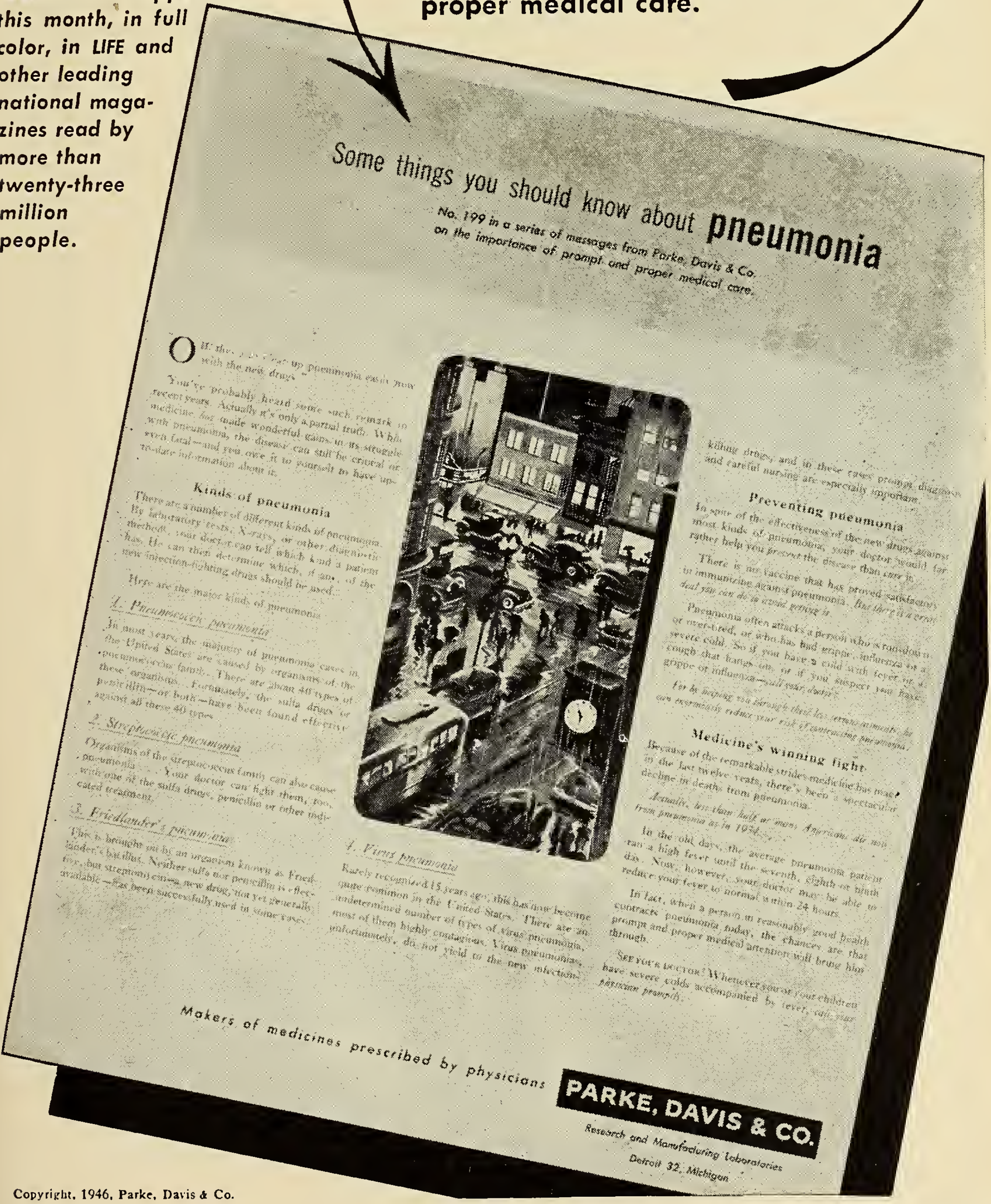
This is the 199th advertisement in the Parke-Davis series on the importance of prompt and proper medical care.

This timely message in behalf of the medical profession will appear this month, in full color, in LIFE and other leading national magazines read by more than twenty-three million people.



Some things you should know about **pneumonia**

No. 199 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.

Kinds of pneumonia

1. Pneumococcic pneumonia

2. Streptococcic pneumonia

3. Friedlander's pneumonia

4. Virus pneumonia

Preventing pneumonia

Medicine's winning fight

Makers of medicines prescribed by physicians

PARKE, DAVIS & CO.

Research and Manufacturing Laboratories
Detroit 32, Michigan

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When Congestive Failure Supervenes

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40 TABLETS
DIGITALINE NATIVELLE
Alcohol 40%
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"....possesses properties which place it first in the choice of digitalis materials for general therapeutic use."[1]

Potency always uniform. Dosage calculated in terms of weight of drug.

Completely and readily absorbed by the gastrointestinal tract.[2]

Produces the same results, with virtually the same speed, by mouth as by vein.

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• •

1. Gold, H.: Connecticut M. J. 9:3 (Mar.) 1945.
2. Levine, Samuel A.: Clinical Heart Disease, ed. 3, Philadelphia, W. B. Saunders Company, 1945, p. 273.
3. Gold, H.; Kwit, N. T.; Cattell, M., and Travell, J.: J.A.M.A. *119*-928 (July 18) 1942.
4. Gold, H.; Cattell, M.; Modell, W.; Kwit, N. T.; Kramer, M. L., and Zahm, W.: J. Pharmacol. & Exper. Therap. *82*:187 (Oct.) 1944.

VARICK PHARMACAL COMPANY, INC.

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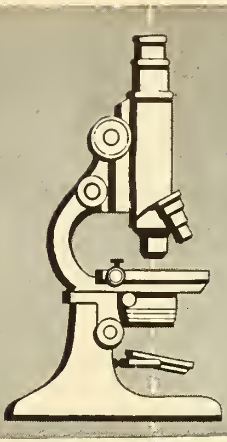

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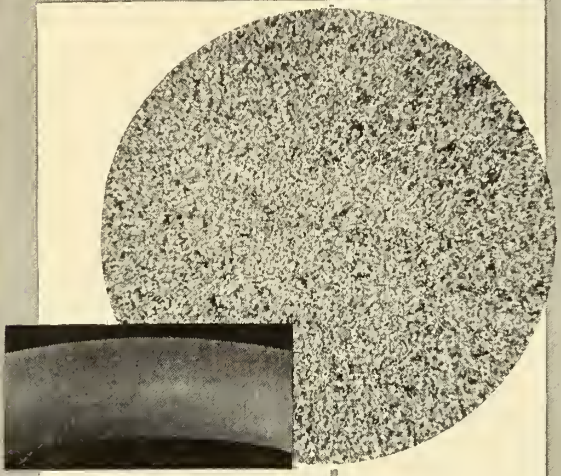
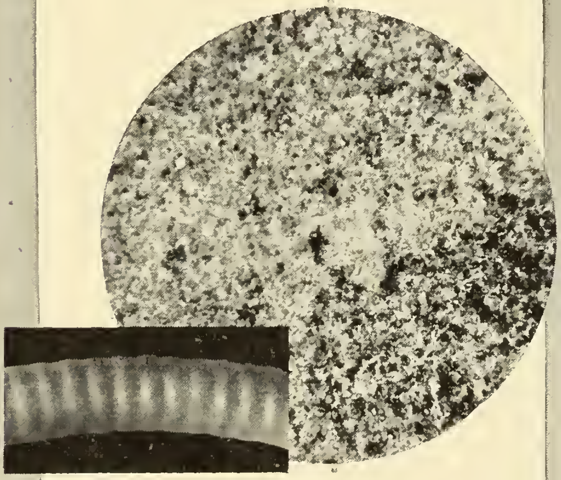


No. 1 Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a "RAMSES" Flexible Cushioned Diaphragm.



No. 2 Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a conventional-type diaphragm.

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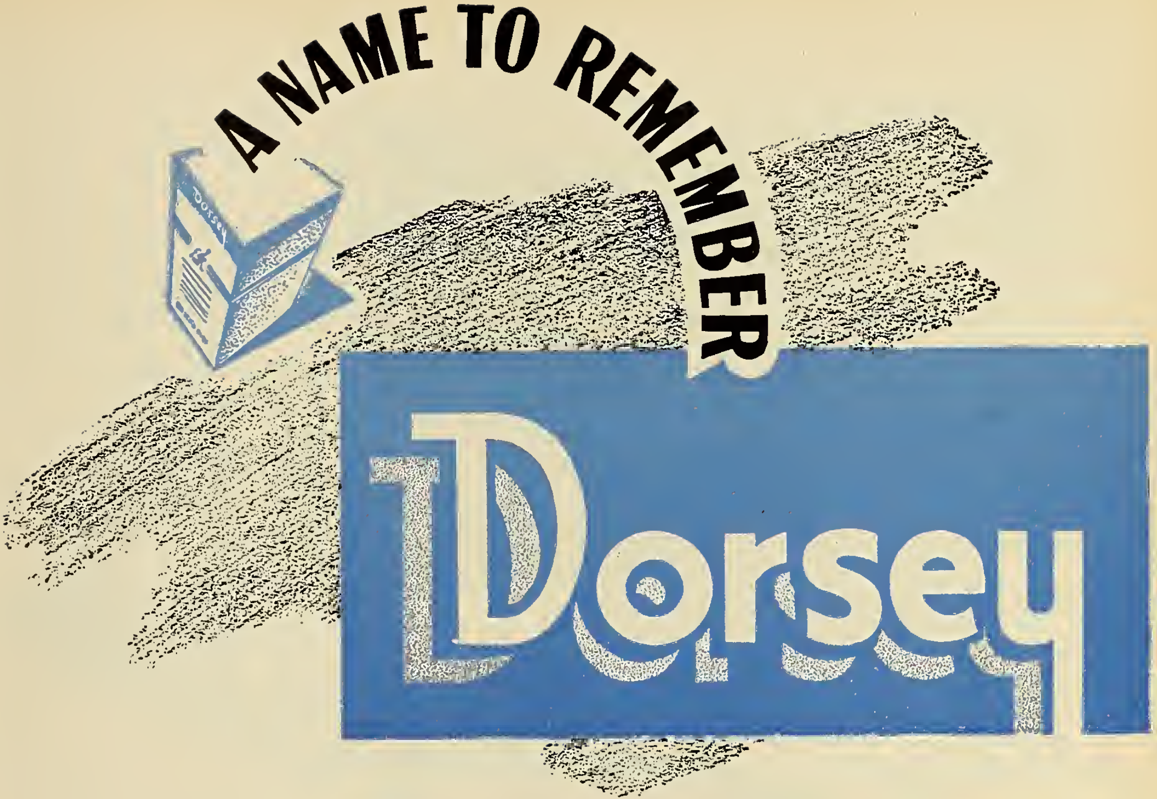

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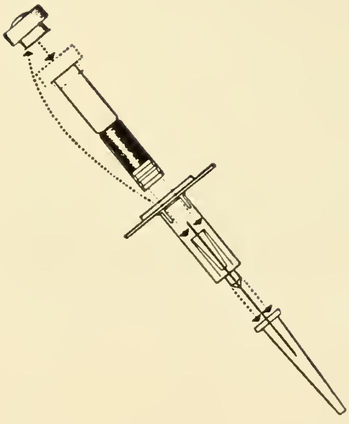
Perhaps not quite . . . but you will find it almost as simple as that to prepare for an injection of Abbott's Romansky formula of penicillin calcium in oil and wax when you use a new B-D* Disposable Cartridge Syringe. No further sterilization of syringe and needle, no drying, and no danger of complications from traces of water. No difficulty of drawing the heavy suspension from a bulk container and no wasted medicament. And, furthermore, no bothersome cleaning of needle and syringe afterwards. *Just throw them away.* Each set consists of a disposable plastic syringe with an affixed standard 20-gauge, 1½-inch stainless steel needle and a glass cartridge-plunger containing a 1-cc. dose of 300,000 units of penicillin suspended in peanut oil and beeswax. It is complete, compact, easy to carry and ready for immediate use. Always a new, sharp needle and an accurate dose. Supply sometimes doesn't meet the heavy demand, but we're making more sets every day. Abbott Laboratories, North Chicago, Illinois

*T. M. Reg. Becton, Dickinson & Co.



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30 days...
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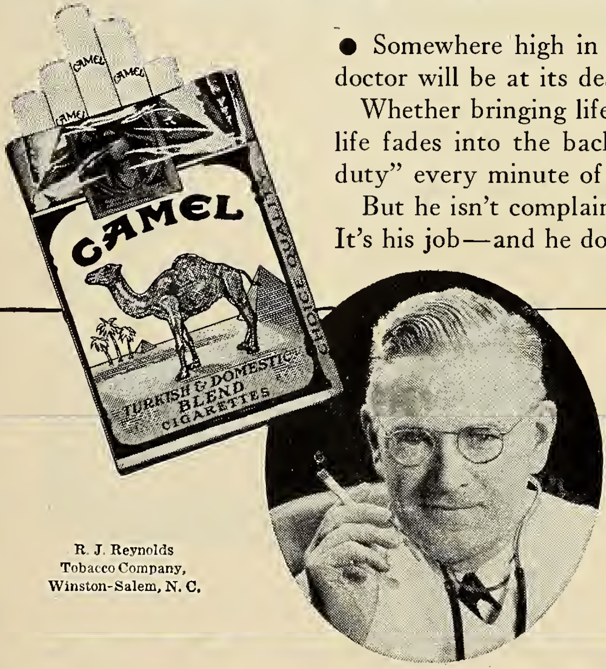
● Somewhere high in the sky the stork is racing. But the doctor will be at its destination first. Ready and waiting.

Whether bringing life or guarding it, the doctor's personal life fades into the background when duty calls. He is "on duty" every minute of every hour of the twenty-four.

But he isn't complaining. Or asking for any special credit. It's his job—and he does it.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**MORE DOCTORS
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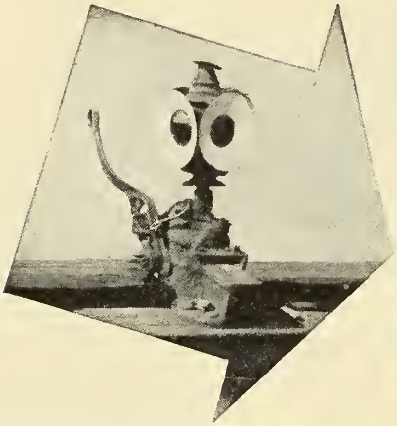

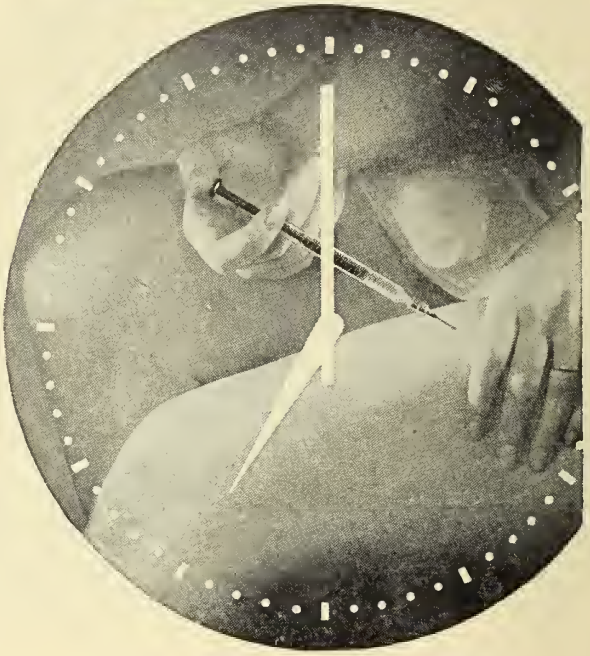

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Most mild and many moderately severe cases may be controlled by *one daily injection of 'Wellcome' Globin Insulin with Zinc.* Vials of 10 cc.; 40 and 80 units per cc. Developed in The Wellcome Research Laboratories, Tuckahoe, New York. U.S. Pat. 2,161,198. Literature on request.

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Globin Insulin
WITH ZINC

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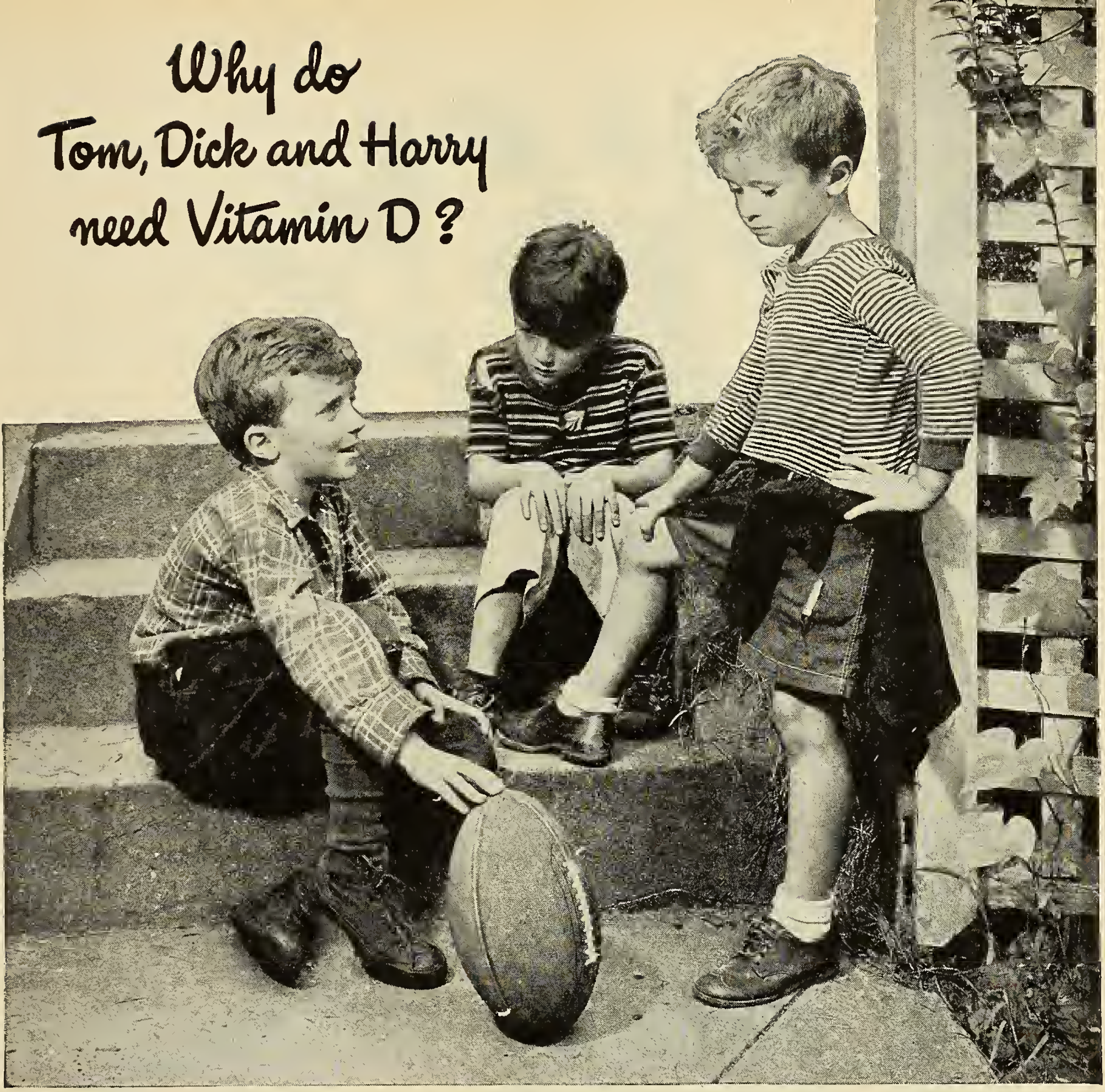
Why do Tom, Dick and Harry need Vitamin D?



Growing children require vitamin D mainly to prevent rickets. They also need vitamin D, though to a lesser degree, to insure optimal development of muscles and other soft tissues containing considerable amounts of phosphorus . . . Milk is the logical menstruum for administering vitamin D to growing children, as well as to infants, pregnant women and lactating mothers. This suggests the use of Drisdol in Propylene Glycol, which diffuses uniformly in milk, fruit juices and other fluids.

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TRADEMARK REG. U. S. PAT. OFF. & CANADA

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MILK DIFFUSIBLE VITAMIN D PREPARATION

Odorless Tasteless Economical

Average daily dose for infants 2 drops, for children and adults 4 to 6 drops, in milk.

Available in bottles of 5, 10 and 50 cc. with special dropper delivering 250 U.S.P. units per drop.

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[1] Am. J. Surg. 44:288 (April) 1942.

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**N. Y. State Journ. Med. 35 No. 11,590*
Laryngoscope 1935, XLV, No. 2, 149-154

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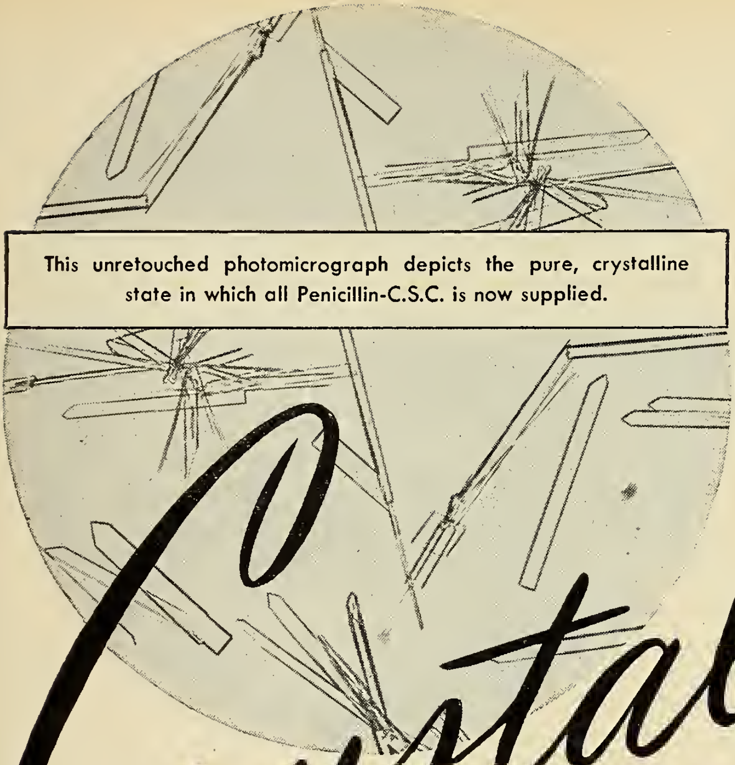

This unretouched photomicrograph depicts the pure, crystalline state in which all Penicillin-C.S.C. is now supplied.

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Crystalline PENICILLIN SODIUM-C.S.C.

As a result of special processes of purification and crystallization, all Penicillin-C.S.C. is now supplied in the form of the highly purified, heat-stable Crystalline Sodium Salt of Penicillin-C.S.C.

Well Tolerated Subcutaneously

In the crystalline state Penicillin Sodium-C.S.C. is so pure that it can be administered subcutaneously even in large doses with virtually no pain or danger of untoward reactions due to impurities.

No Refrigeration Required

Crystalline Penicillin Sodium-C.S.C. is so heat-stable that it can be kept at room temperatures, virtually indefinitely without losing its potency.* It can now be carried in the physician's bag or stored on the pharmacy shelf. No longer need the physician wait until the patient can be hospitalized or until refrigerated penicillin can be obtained from the nearest depot.

*CAUTION: Once in solution, however, penicillin still requires refrigeration.

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Because of its high potency per milligram, Crystalline Penicillin Sodium-C.S.C. exerts optimal therapeutic activity. A recent report shows the advantage of highly potent preparations.[1]

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The high state of purification achieved in Crystalline Penicillin Sodium-C.S.C. is indicated by *its high potency per milligram*. The number of units per milligram is stated on each vial, thus enabling the physician to know the degree of purification of the penicillin he is using.

[1] "The potency of the penicillin undoubtedly affected the results. The first 15 patients, all treated with the same batch of penicillin, were cured. The next 7 patients were treated with the same dosage of a different batch of penicillin. Five of these 7 were not cured. Assays of penicillin used for these 7 patients showed it to be of reduced potency." Trumper, M., and Thompson, G. J.: Prolonging the Effects of Penicillin by Chilling, J.A.M.A. *130*: 628 (March 9) 1946.

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PENICILLIN-C.S.C.
Crystalline Sodium Salt
CAUTION: For administration only under physician's direction. See brochure
COMMERCIAL SOLVENTS CORPORATION
TERRE HAUTE CSC INDIANA, U.S.A.

Crystalline Penicillin Sodium-C.S.C. is available in serum-type vials containing 100,000, 200,000, or 500,000 units.

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COMMERCIAL SOLVENTS
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17 East 42nd Street New York 17, N. Y.
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Bad winter ahead for the pneumococci

Stormy days are usually followed by sharp increases in the incidence of upper respiratory infections, often the prelude to pneumococcal pneumonia. Fortunately, physicians are prepared to combat the pneumococci with sulfonamides and penicillin.

Although sulfonamides are generally effective, problems sometimes arise in their administration. In the patient with cardiac or renal disease, it may be difficult to maintain proper fluid balance. This imbalance may lead to urinary tract complications. Others may experience untoward toxic effects or lack of response to the drug. In these cases, Penicillin, Lilly, is particularly valuable. While the intramuscular injection of 10 to 15 thousand units every three hours throughout the night and day might be helpful, doses of 20 thousand or more units at the same intervals are preferable. Penicillin, Lilly, is available in 20-cc. ampoules containing 100,000, 200,000, or 500,000 units.

Lilly

ELI LILLY AND COMPANY, INDIANAPOLIS 6, INDIANA, U.S.A.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 November, 1946 No. 11

MILITARY DISEASES IN CIVILIAN LIFE

Preventive Procedures and Practical Suggestions

GAYLORD W. ANDERSON, M.D., Dr.P.H.
Professor and Director, School of Public Health, University of Minnesota
Minneapolis, Minnesota

THE problem that tropical diseases present in Minnesota is radically different from that which is encountered in the natural habitat of these infections. In the tropics one is dealing with ecological conditions which have brought about so wide a spread of the disease that a large fraction of the population is already infected; in some instances the non-infected person is the exception. As a consequence, the native of these areas has made unconscious adjustment for his condition, an adjustment which is often expressed in a fatalistic resignation which removes either attempt or desire to rectify the situation, even if he were able to do so. The inevitable result is continued spread of disease. By way of contrast, Minnesota is blessed with ecological conditions which are highly unfavorable to the spread of these infections. It has, therefore, a non-infected population and is in a position to do something about the occasional infections that are brought back.

Coincidental with the advent of international airplane travel in the prewar years, the prophets of disaster began to make dire predictions of the introduction and spread of tropical diseases. The safety from international spread that had existed due to the slowness of water transport, which kept other continents farther distant than the incubation period of the diseases subject to maritime quarantine, was suddenly lost, for a traveller infected in a far land might now reach American shores by air before the signs of the disease developed. The prophets of disaster forecast the introduction of yellow fever from South America, later the spread of *Anopheles gambiae* from its temporary foothold in eastern Brazil, the importation of cholera and plague from the Orient and the introduction of new strains of malaria and dysentery and of new intestinal parasites. These were but a few of the more significant predictions, none of which has as yet come true. The advent of war with the stepped-up rate of international travel and the subsequent return of large numbers of troops from the disease-infected tropics offered even greater possibilities for dire predictions, yet evidence of their validity still is lacking, nor can the idea be accepted that the increased tempo of postwar travel on a civil basis will produce hazards not experienced on a wartime military basis.

This is not the place to discuss the many epidemiologic fallacies that have underlain these predictions of disaster. Suffice it to say that in these predictions there was failure to differentiate between a bacteriologic or parasitologic possibility and an epidemiologic probability. In other words, there was failure to consider the obvious laws of mass action as applied to the effect of disease within a community. There is every reason to be certain that regardless of the return of infected troops and the postwar civilian travel into infected lands, the establishment of exotic tropical diseases in Minnesota will not occur, and the risk for even the southern part of the United States is extremely remote.

This does not mean, however, that one can sit back complacently with the thought that, because it is unlikely that these diseases will establish an

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Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 20, 1946.

endemic foothold within the state, they can be ignored, or that there will not be an occasional instance of local transmission. Unless great care is exercised in the selection of donors, avoiding the use of those infected within the preceding two or preferably five years, there will be instances of transmission of malaria through transfusions. Travel contact with endemic areas is increasing. Citizens travelling to these areas will require protection. Even if protected, they may acquire infection and present the physician with exotic diseases to be recognized and treated. Visitors from foreign lands will be more numerous and will present comparable problems. Prompt recognition of these cases will permit appropriate treatment and the adoption of suitable measures to reduce the risk of even an occasional local transfer of infection.

The first prerequisite to an accomplishment of these ends is a sense of awareness of the hazards of these various areas. The physician of today and tomorrow must know what are the disease hazards of foreign lands; lacking such personal knowledge he should be should be able to turn to his health department with confident assurance of obtaining reliable information on such hazards. I should envision the health department of the future as a reliable source of such information for the travelling public and for the physician seeking to safeguard his patient who is embarking upon international travel. Yet I doubt if many departments today are in a position to furnish much reliable information. Similarly the department should be able to advise the physician as to suitable preventive measures to be taken in these various areas.

Never before has there been such an armamentarium of antigens, drugs and other preventive measures as has been evolved through wartime research or the wartime testing of previously known measures. Vaccines for yellow fever and typhus, developed before the war, have been severely tested and proved to be among the most effective of all known antigens, far exceeding the fondest hopes as to their value. Their administration should be standard practice for travellers to certain parts of the world. The physician has had increased evidence of the value of typhoid vaccine and of smallpox vaccination if properly performed. The many exposures to malignant smallpox in the Orient have shown that the traveller if properly vaccinated will be protected, and if not vaccinated may be a victim of this disease. Additional suggestive evidence is at hand of the value of cholera and plague vaccines, evidence of sufficient value to warrant their use for the person who is to be in a position where other protective measures are uncertain quantities. Wartime research has brought to light vaccines of apparent efficiency against Japanese-B encephalitis and possibly against scrub typhus and dengue. Still other vaccines are in the offing. It is not suggested that any one traveller will require the use of the complete antigenic armamentarium; the decision as to what is to be used in any individual case must be made by the physician acting on full knowledge of the disease risks and the international quarantine practices of the countries to be visited.

The traveller of today can be protected still further against the hazards of disease in foreign shores. Repellents of unrivalled efficacy offer him a means of protecting himself against pestiferous, as well as disease-bearing insects, ticks and mites, in areas where control has not been achieved. Whereas the military forces were able to carry their control measures with them, the civilian traveller of tomorrow will have to accept the inadequacy or even lack of control measures in the areas to be visited and will, therefore, have increased need of repellents. Similarly, he will have need of personal insecticides such as DDT, which has shown an amazing capacity as a lousicide when dusted into the clothing. Water disinfecting tablets may well be a standard part of his travelling equipment. His physician may desire to equip him with certain antimalarials, especially if further experience bears out the present indication that chloroquine, otherwise known as 7618, exerts a suppressive effect if given in weekly doses and is devoid of the unpleasant minor toxicity of quinacrine (atabrine).

These same measures, developed or brought to the fore by the war as part of the tropical disease control program, offer great hope for more effective means of treatment and control of the occasional cases which will be recognized in returned military personnel and in returning travellers. Just as the physician has finally learned to appreciate the many advantages that quinacrine (atabrine) possesses over quinine, wartime research has presented him with two new antimalarials which at last offer great hope of being really effective plasmodicidal drugs, which will not only cure the patient quickly but will also destroy all residual organisms, so that the patient will not continue in a latent carrier state, serving as a source of infection for others. Chloroquine has already shown itself to be superior to atabrine in the treatment of the malignant falciparum infections, while a related compound, referred to as SN 13276, offers real promise as a plasmodicide in vivax infections. Such findings hold great promise, not only for the minor problem in Minnesota of treating the occasional case of malaria that is brought to the state but also for the vastly greater problem of malaria control in the endemic areas, where the disease has for years been the chief deterrent to greater development of the potential riches of the land.

Of even greater significance is the prospect of effective insect control through the extensive use of the newer insecticides, especially DDT. The extreme toxicity of this substance for insect life, with its capacity to render an area unsuitable for insects for a prolonged period of time, offers many possibilities that cannot fail to intrigue the imagination of those who envision a new era of control of pestiferous as well as disease-bearing insects. In Minnesota there are both, though the problem of disease-bearing insects shrinks to nothingness when compared with the problem in some parts of the world. Military experience has clearly shown that use of DDT will achieve an amazing elimination of insect life and that it can be applied relatively simply to large areas, causing an effective control of insect-borne diseases, notably malaria and dengue. It is logical, therefore, that one should seek to determine the extent to which this new weapon can be applied in civilian life.

I have purposely stated that the attempt should be made to learn the applicability of DDT to civil insect-control problems, and not that a vast program should be started immediately, attempting to duplicate in civilian life over vast areas what was accomplished by the military within relatively restricted areas. The problems are totally different in magnitude and the potentialities for harmful side-effects are of a greatly different order. Military forces using DDT in restricted control or combat areas need give little thought to the toxic potentialities for agriculture, the poisoning of crops, the destruction of beneficial as well as harmful insects, and countless other side-effects. Yet it is precisely these questions that must be answered before a start can safely be made upon extensive civil programs of control of disease-bearing as well as pestiferous insects. Doubtless certain factors will be discovered that limit the use of this material, but I have no doubt that ways will be found whereby effective control measures will be developed that will be devoid of the risks. There exists a very practical necessity and obligation of proceeding with due care and caution until these limitations are learned, lest in enthusiasm more damage than good is unwittingly done.

The return of troops as well as of civilian travellers means that inevitably there will occur an influx of persons harboring the cysts of the *Endameba histolytica,* along with occasional convalescent carriers of dysentery bacilli. The former will be added to the already sizable reservoir of ameba carriers. Many of them will present recurrent intestinal disturbances which will bring them to medical attention, but the majority will never be recognized and will remain as a potential source of infection. Although some will doubtless enter food-handling occupations, the adoption of a program for their recognition cannot be urged, for the technical difficulties are still such as to make such a program impractical. Similarly, it will be necessary to recognize that the conventional water-treatment practices are not always such as to provide for destruction of amebic cysts, and, therefore, further dissemination of the infection may occur. This does not mean that one need anticipate a widespread or disastrous upsurge in the incidence of amebic dysentery. The present reservoir of infection is so large and the opportunities for dissemination of the disease so manifold that the returning infections constitute a very small and insignificant addition. There is as yet no evidence that the strains of amebae so added will constitute any more serious threat than those which are already endemic. Frankly, the public health workers do not know why there is such apparent widespread infection and yet so little evidence of harmful consequences, but until there is evidence of such consequences it certainly would not be justified to institute the enormously expensive program that would be necessary to eliminate all risk of spread of the cysts. Increased attention to sanitary practices of food handling seems to be all that can be recommended as practical at the moment.

The risk of extensive spread of new strains of

(Continued on Page 1111)

BACILLARY DYSENTERY

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WITH the return of members of the armed forces from service in the tropics and subtropics the American medical profession is showing an increasing interest in the so-called tropical diseases. In the northern tier of states these diseases will, on the whole, be seen among members of the armed forces who incurred them while in the tropics. They will not be acute forms but rather recurrent or chronic ones which have failed to respond satisfactorily to previous treatment. In the case of bacillary dysentery, which is not strictly a tropical disease but one of a world-wide distribution under conditions of poor hygiene and sanitation, the situation is different. Here is presented a disease which is unlikely to be seen in chronic or recurrent form but which is probably more important than others because of its continual endemic presence.

Incidence

One of the most important causes of morbidity in the world, especially in the tropics and subtropics, bacillary dysentery is very common in all parts of the United States. Its incidence is greater than any available figures reveal because in its mild form it is frequently unrecognized due to inadequate etiologic investigation of diarrheal diseases. Increasing interest in the study of these diseases points this out in the relative figures for the reported incidence of unclassified diarrheal disease and bacillary dysentery. Thus, between the years 1933 and 1943, the reported unclassified diarrheal disease incidence decreased 58.8 per cent while that of bacillary dysentery increased nearly 400 per cent. Not only a relative but actual increase in the disease is occurring.[1] The incompleteness of incidence reports is due (1) to the failure of patients to consult the physician for mild diarrhea, (2) to inadequate isolation and study, (3) to apparent success of palliative therapy in the milder cases, and (4) to lack of laboratory facilities. Obviously this points to a problem important because the means of prevention are known and the results of treatment are excellent.

Etiology

Bacillary dysentery is caused by the entrance into the gastro-intestinal tract of bacilli of the genus Shigella of which the most common are the *Shigella dysenteriae* (Shiga bacillus), *Shigella paradysenteriae* (Flexner bacillus) with its many sub-types, and *Shigella sonnei* (Sonne bacillus). These organisms are widespread and are chiefly transmitted by the ingestion of food or drink contaminated by the feces of patients or carriers. specimens obtained from rectal swabs. (The latter have no advantage except that by this method selective media can be inoculated immediately, obviating the necessity of waiting until the individual has had a bowel movement. In the swab method, a cotton-tipped applicator is placed in a small rubber tube, the distal end of which is lubricated and inserted into the rectum. The applicator is pushed beyond the inner end of the tube, the mucosa swabbed, and the applicator withdrawn into the tube which is then removed from the rectum.) The contamination of food or drink can be effected by food handlers who are carriers, by vectors such as flies or ants, or by water or vegetables contaminated at their source. The latter is especially important where human feces is used as fertilizer and is not common in this area. Man is the transmitter of the disease between localities and is much more important as a carrier than is generally recognized.[3] He may carry the organisms as a convalescent patient for many months, or he may be a carrier without ever having had the clinically recognized disease. Surveys of healthy individuals in New York City showed 2 per cent to be carriers while in the South, (Georgia, Mexico, Porto Rico) the incidence was 3.2 per cent.

Clinical Course

Observation of the clinical course of this disease in the Armed Forces[4] demonstrated the wide variation in clinical manifestations and the general lack of relationship between the type of Shigella isolated and the severity of the illness. Mild cases with only slight abdominal discomfort and a few or no loose, non-bloody stools are much more common than those with the usually described clinical picture. These cases have been known as intestinal "flu," summer diarrhea, or acclimatization diarrhea. From these cases the pic-

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ture varies to one of a severe fulminating infection associated with a marked general toxemia. The more easily recognized course is one of sudden onset, often with chill, headache, vomiting, generalized abdominal pain, cramps and tenesmus, followed shortly or up to a day later by diarrhea with blood, pus and mucus in the stools. However, it must be remembered that many variations of this picture may occur. Cases may be ushered in with high fever and delirium. They may be first seen in coma. While the abdominal tenderness is usually general, it may be localized in the lower right quadrant and simulate acute appendicitis. Only about 25 per cent of cases showed bloody stools in one hospital's experience in Africa; most were watery and with mucus. The disease may be associated with a fever to 103° F. and a degree of prostration which depends on the toxicity and water loss. Occasionally, the picture may be a febrile illness with the abdominal symptoms appearing twenty-four to forty-eight hours later. These cases and those with complications suggest that this is a systemic disease becoming early localized in its manifestations.

Of these types the most common and most often undiagnosed are the mild cases. These are often treated symptomatically, respond well in a short time without therapy and are not adequately investigated. The importance of this group rests not in its disabling character but in the danger of the convalescent patients as carriers. They are less apt to be missed in epidemics where their occurrence in association with more acute cases increases the suspicion of the physician.

Occasionally the disease may assume a relapsing form or go into a chronic type where insufficient therapy is given or too early a return to normal diet is allowed. With present methods of treatment such cases should be rare. In epidemics atypical forms may be seen, described by outstanding characteristics as appendicular, pneumonic, meningitic, agranulocytoid or afebrile.[1]

Laboratory findings other than stool cultures are not significant. The white blood count is usually normal but may rise to 15,000 to 18,000 Leukopenia may be found in very toxic cases, and until recently agranulocytosis has usually been fatal. Agglutination tests are negative in the acute stages and of doubtful value in the relapsing or chronic forms. Considerable difference of opinion exists as to the value of proctosigmoidoscopy in the diagnosis of this disease. In experienced hands this examination may reveal hyperemia, petechiae and ecchymoses, edema, superficial necrosis and profuse mucus secretion which characterize the disease. Some,[4] however, regard it unjustified as a routine procedure in the acute stage because of the pain associated with introduction and the damage which may result. Probably a clinical therapeutic trial is justified in the acute case, with visual examination restricted to those not responding. The clinical course of the untreated cases usually runs from seven to ten days. With treatment the diarrhea usually stops promptly in a few days, the disability period varying with the severity of the disease. Early treatment in the acute stage is especially important in the prevention of relapses, the chronic form, and the carrier state.

Differential Diagnosis

The differential diagnosis of the usual diarrheal diseases is not often difficult. Food poisoning and the Salmonella infections occur in groups following the ingestion of foods which can often be recognized, the former being due usually to toxins of staphylococcus origin and coming on several hours after partaking of the food, the latter appearing about twenty-four hours after the food ingestion. Bacillary dysentery is the most common of the diarrheal diseases, and the diagnosis can be confirmed by a positive stool culture although a negative report occasionally occurs. Acute amebiasis is much less common and in general presents a somewhat different clinical picture, the onset being more insidious, symptoms of toxemia absent, and the stools showing few leukocytes. Differentiation by these alone is hazardous, the diagnosis ultimately depending on repeated microscopic studies of warm stool specimens and proctoscopic examination.

Malaria must be occasionally considered, especially when the onset appears with a chill. Examination of blood films for the plasmodia must be made when there is any doubt.

At times the onset of infectious hepatitis will simulate bacillary dysentery, but the stools will not show blood or pus, generalized abdominal tenderness is absent, and a tender liver is usually palpated.

Complications

Complications are occasionally seen, usually after the acute stage is passed. Arthritis, mono- or poly-articular, frequently involving larger joints such as the knees, is seen, usually in the Shiga type. Myocarditis, often quite severe, occasionally complicates the Shiga type, but complete recovery is the rule. Pneumonia, neuritis, iridocyclitis, and conjunctivitis have been described.[2] The relative number of complications seen in the Mediterranean Theater of Operations of the United States Army was much less than reported complications of past epidemics. This is probably due to the general use of the sulfonamides therapeutically. The complications seen were not related to the severity of the original infection.

Treatment

The advent of the sulfonamides has markedly altered the treatment of bacillary dysentery, greatly shortened the course, and nearly eradicated the troublesome relapsing and chronic forms. It has rendered obsolete the use of cathartics which is now definitely contra-indicated. The response to sulfonamide therapy is very prompt. Rarely does a patient fail to show improvement within twenty-four hours after it is started, there being an increase in well-being, a reduction in the temperature, and a marked reduction in the number of the stools. Sulfadiazine is probably the drug of choice in dosage of 2 grams at the start followed by 1 gram every four hours for two days, then 1 gram every eight hours for three days more. Sulfaguanidine is preferred by some with an initial dose of 7 grams, a dose of 3.5 grams every four hours for the first forty-eight hours, following which 3.5 grams is given every eight hours to complete ten days of treatment. The object of therapy is to relieve the patient and to eliminate the organism from the stools, thus decreasing the number of convalescent carriers and lessening the likelihood of recurrences. Occasionally several courses of sulfonamides are necessary to accomplish this, and a rare case may then be unresponsive. The latter usually becomes negative spontaneously in six to eight weeks. Penicillin therapy is useless.

The relief of abdominal pain and restlessness is accomplished by a large single dose of opiate, preferably paregoric, 8 to 12 c.c. Atropine sulphate may be helpful in treating intestinal spasm. Absolute bed-rest is indicated as long as evidence of toxicity exists.

General supportive therapy is important. Fluids should be given in large amounts to replace the water loss, 3,000 c.c. daily or more. A sufficient amount should be given to insure a daily urinary output of at least 1,000 c.c. In more severe cases human plasma should be used where the picture of shock appears. Serum therapy has little place in the treatment at present. The action is probably antitoxic and is more effective in the Shiga type. It should be used only in the severely toxic cases, early in the disease and in doses of 40 to 80 c.c. once or twice daily until the temperature and pulse return to normal.

Good nursing care is essential, and the patients should be isolated as contagious cases with especial attention to the disposition and sterilization of discharges.

Diet in the acute cases should be very sparing, limited to rice or albumin water, tea, gruels, et cetera. With cessation of diarrhea the softer foods may be added slowly, but it is well to remember that the healing of the bowel takes considerable time and premature return to a general diet can easily cause a relapse of the disease. Mild or moderately ill cases are able to retain a soft diet from the outset.

Following clinical recovery, stools should be examined on alternate days and the patient confined until at least two successive stools are negative. Thereafter it is wise to check them once a week for a month to recognize those cases which may become carriers. Carriers are susceptible to therapy and should receive the same treatment as the clinical cases.

Due to the preponderance of bacillary dysentery among the diarrheal diseases, it seem advisable, except in outbreaks of food poisoning, to treat all acute diarrheas with the sulfonamides even if laboratory facilities are not available. Experience has shown that any case not responding to such therapy within forty-eight hours is very unlikely to be due to Shigella infections.

Control

The control of bacillary dysentery is too involved a problem to discuss in detail. It is the same as that for the other diarrheal diseases involving caution indicated by our knowledge of the spread of such disease. Thus it is essential that all food handlers be known to have negative stools, that they wash their hands well and frequently, that vector control, flies, cockroaches, ants, be adequately handled, and that the purity of water supply and the innocence of fresh vegetables ingested should be established. With these principles observed, the diarrheal diseases should show a continually decreasing incidence.

Conclusions

A few observations may summarize recent advances in our knowledge of bacillary dysentery.

1. This disease, besides being one of the devastating diseases of the tropics, is also an important source of morbidity in most other parts of the world.

2. Bacteriologic study of the stools in diarrheal disease shows a much higher incidence of bacillary dysentery than had been expected. These investigations also show that many cases of mild diarrhea are bacillary dysentery, significant in that many of their convalescents may be carriers.

3. Past treatment of this disease with saline cathartics has been rendered obsolete by its remarkable response to sulfonamide therapy. Sulfadiazine is the drug of choice.

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MILITARY DISEASES IN CIVILIAN LIFE

(Continued from Page 1107)

bacillary dysentery infection seems slight. Bacillary dysentery is already widespread in the United States, usually in unrecognized form, and there is no evidence of a decline in the incidence of these infections. Fortunately, most of the strains to be brought back will be the same as those now endemic. The occasional new strains are fortunately of greater severity and, therefore, infection with them will be more readily recognized and treated. New methods of treatment, preferably with the sulfanomides, would appear to be effective in establishing bacteriologic as well as clinical cure. The chief obstacle to establishing effective control of existing strains has been the fact that the majority of the infections are so mild as to escape recognition, and thus continue to spread through rather direct association with the new victim. The present measures for prevention of water- and milk-borne infections are adequate, and one may expect less spread of more virulent strains through food or direct association, inasmuch as the mere severity of the infection will bring the disease to official attention. It is incumbent on all physicians to develop an increased sense of awareness for these infections so that they may be properly segregated and treated.

It is apparent from the foregoing that little fear is justified as to the impact of tropical infections upon an area such as Minnesota. Imported infections will doubtless occur but it seems extremely remote that they will establish a foothold within the state. Furthermore, it seems unlikely that any drastic changes are needed in current public health practices. The most important single factor is an increased alertness of the medical profession to the detection of the occasional instance of tropical disease, so that effective treatment and control measures may be instituted promptly to guard against even the occasional case of local transfer of infection.

PLANNING THE HOSPITAL FOR COMMUNITY SERVICE

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THE studies of the Commission on Hospital Care confirm what everyone intimately associated with the problem knows, that the 50,000,000 or more Americans who live outside the immediate trading area of the larger centers of population do not have conveniently available the same quality and quantity of health services as the people in these urban centers. The principal reason is economic. Wealth tends to concentrate in the cities, and more and better health facilities and services are found there.

The city health department has a budget and the trained personnel to enable it to do an effective job in its special field. Hospitals as a rule are of fairly substantial construction and equipped to give the people service, and the ratio of beds to population is much higher than in rural communities. The ratio of physicians, dentists, nurses, and other health personnel to population is comparatively high and they have better training and experience.

Few specialists in medicine are found outside the larger cities. One reason is that many of the specialists can serve the needs of a comparatively large population. It takes 40,000 or 50,000 people to keep a diplomate of the American Board of Radiology busy and the diplomate of the American Board of Pathology can serve 80,000 to 100,000 people, but to maintain these ratios on a national basis would require about twice as many of these specialists as are now available. That means that the large centers attract these men and the smaller communities either do without these essential diagnostic services to the practice of modern medicine or the patient is compelled to travel comparatively long distances. This absence of good diagnostic service is perhaps the major weakness in rural and small town health services. The hospital activities of the W. K. Kellogg Foundation are directed primarily toward improving these services.

The problem of providing rural and small town America with adequate health services divides itself into three phases: (1) finances, (2) personnel, (3) facilities. These three divisions of the problem are so interdependent that it is difficult to say which comes first or which is most important, but without some more satisfactory method than at present of paying for the services of health personnel and for construction and operation of facilities little can be accomplished.

1. *Finances.*—The old pay-as-you-go method of financing medical care and hospital service does not work so well for the lower income groups. The present trend is toward pooling of community resources on the insurance principle, and both voluntary and compulsory plans are being vigorously advocated. The farmer, an individualist of the first water and inclined to be self-respecting and self-reliant, does not take kindly to the idea of legal compulsion in such an intimate personal relationship as that of physician and patient, but he does not belong in any large numbers to the voluntary prepayment plans for hospital care and practically not at all to medical service plans and he does not have conveniently available the same quality and quantity of medical service and hospital care as his city neighbor.

A number of reasons could be cited for this condition, but the major reason is economic. The farmer at least thinks he does not have the financial resources with which to pay for these services. It might be argued that he spends and possibly wastes money on many things less essential than health, but the fact still remains that the farmers as a group do not have as much income per capita as city people and they do not join prepayment plans.

A logical development would seem to be state or federal subsidy, or perhaps both, of established voluntary plans that would encourage the indigent and medically indigent to become members. Counties in most states either are entirely responsible or share the responsibility with the state for the hospital and medical care of this segment of society. If the state or the federal government, such as proposed in the bill recently introduced by Senator Taft, should subsidize voluntary pre-

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Read at the annual meeting of the Minnesota State Medical Association, St. Paul, May 22, 1946.

payment plans, this would be a powerful stimulus to county public health and welfare authorities to get the indigent and lower income groups enrolled in the plan and pay the subscription if the individual or family were not able to pay. The advantages of having all economic groups in the plan are obvious.

2. *Personnel.*—Physicians and other health personnel tend to congregate in the larger centers of population where they have adequate diagnostic and therapeutic facilities and well-trained consultants to work with. Adequate facilities in the more rural communities will tend to attract more doctors, largely general practitioners, but it would be necessary to draw on the larger centers for consultants in the specialties and for administration. This means some sort of regional organization of health services around the larger centers of population.

The medical schools can make a large contribution toward improving rural medical service through more extensive graduate and postgraduate medical education programs. The University of Minnesota has an extensive postgraduate program, but the University of Michigan has recently gone farther in both graduate and postgraduate education. It will rotate resident physicians through smaller approved hospitals. At the university he gets the basic science instruction he needs for his specialty board. This university affiliation will elevate the standards of graduate medical education and, incidentally, improve the quality of medical service.

3. *Facilities.*—With hospital care financed on a cost basis and medical service paid for on a prepayment basis, rural America is still faced with the problem of providing facilities from its comparatively limited resources. Senate Bill 191, the Hospital Construction Act, if it becomes law, would help to a considerable extent with this problem. If the report and recommendations of the Commission on Hospital Care, which will appear next October, are followed in carrying out this grants-in-aid program to states for the construction of hospitals and health centers, an orderly plan of development of health facilities should assure rural America of adequate facilities.

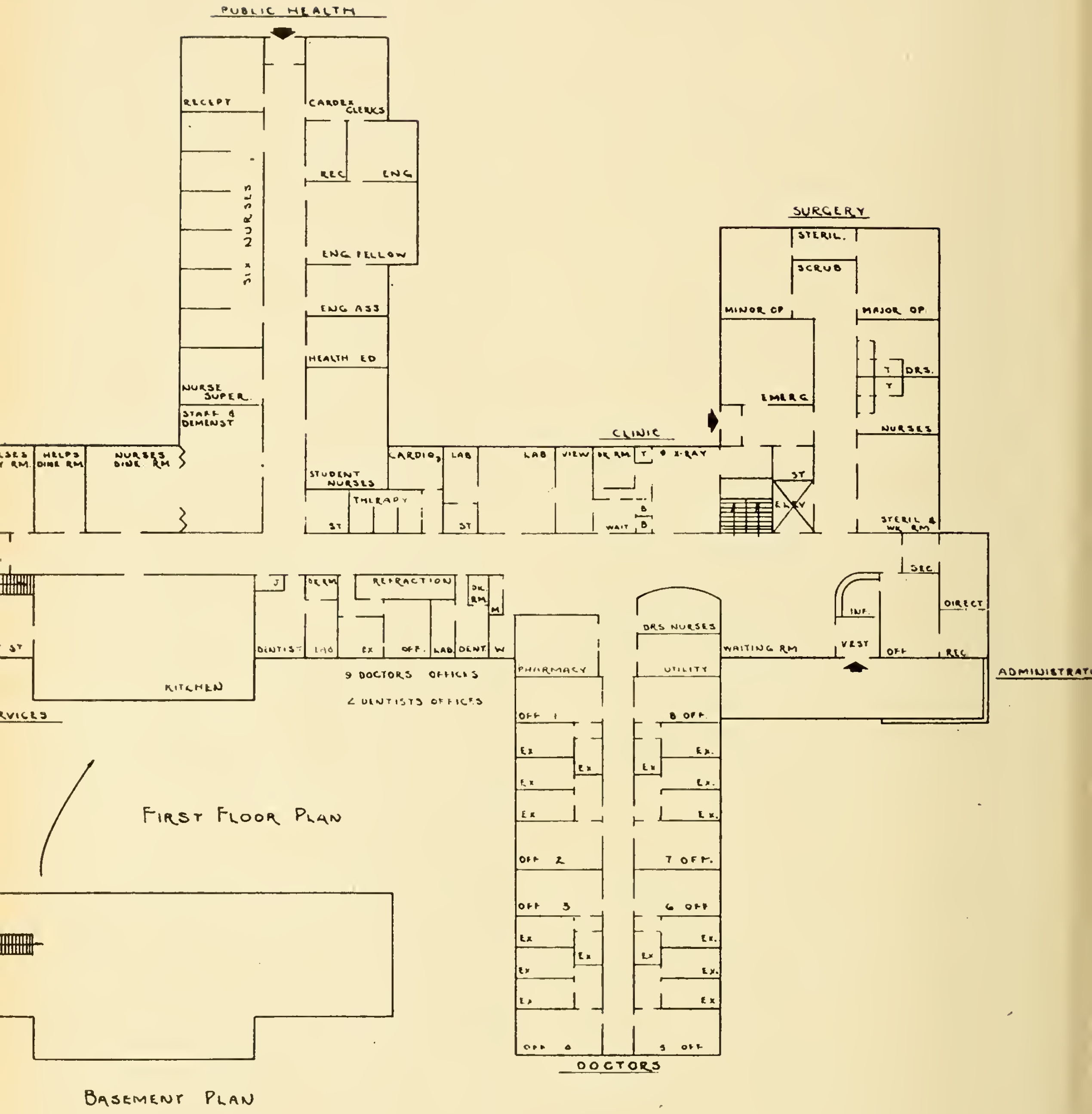
The Commission on Hospital Care has found that health services generally are somewhat disorganized and there is too much overlapping of function and duplication of effort. It will undoubtedly recommend that the general hospital become the community health services center by adding to its functions responsibility for communicable diseases, including tuberculosis, and nervous and mental and chronic diseases, public health activities, visiting nurse service, and the offices of the physicians and dentists. To develop such a center requires careful planning along lines that have not been followed in the past.

The floor plans of the health services unit in Charlotte, Michigan, illustrates how these services may be integrated to provide adequately for the needs of the people with maximum efficiency and at minimum cost. Charlotte, county seat of Eaton County, has a population of 5,500. Approximately 26,000 people live in its hospital service area. It is twenty miles from Lansing and twenty-six from Battle Creek, both comparatively large cities from which it secures consultants in radiology and pathology. This unit will replace an old residence with twenty-four beds now used as a hospital.

The small basement under the kitchen area provides space for the heating plant, lockers for employes, and some storage. The first floor is at ground level and, except for the basement area, is concrete slab poured on the ground. In a community like this, where land is not expensive, there is no point in burying the dietary services, for example, in the ground, as is frequently done. It is also a distinct advantage to have the first floor at ground level.

The several departments on the first floor are functionally related to secure maximum efficiency. The plan is also expandable in several directions. Future expansion might include a chronic disease unit. Traffic can be adequately controlled at the main entrance. The diagnostic and therapeutic facilities are conveniently located to the offices of the physicians and dentists. The patient coming in by ambulance may go to surgery or by elevator to the patient floor. The hospital has a pitched roof and the elevator goes to the third floor where there is ample space for attractive living quarters for the resident physician and for storage. The dietary department has a separate service entrance.

The plan is for the county health officer to be director of both the hospital and the health de-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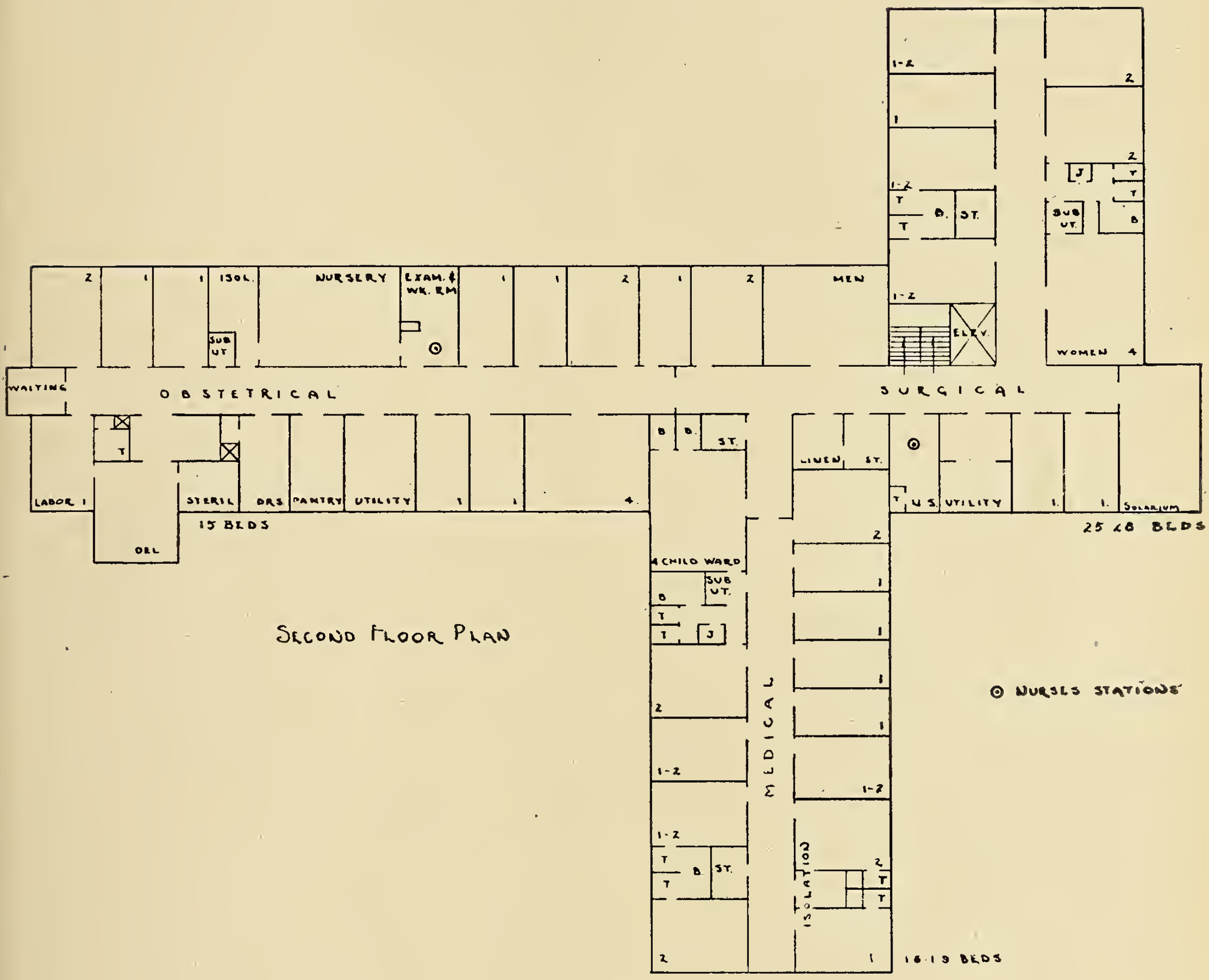
DOCTORS
RVICES
FIRST FLOOR PLAN
BASEMENT PLAN

Fig. 1. Hayes-Green-Beach Memorial County Hospital (56-62 beds). Lewis J. Sarvis, Architect, Battle Creek, Michigan. First floor plan.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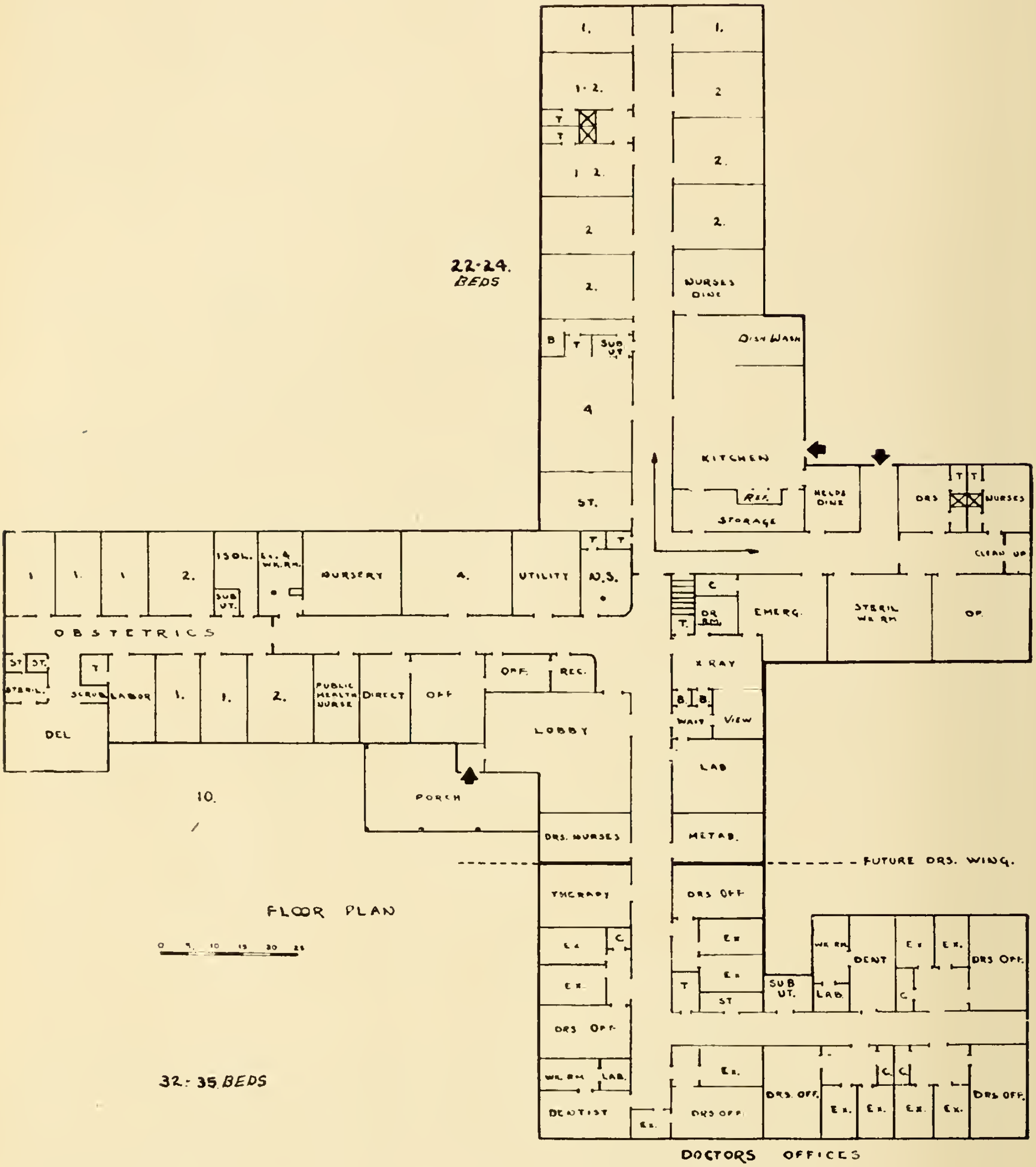
SOLARIUM
25 28 BEDS
4 CHILD WARD
SUB UT.
MEDICAL
ISOLATION
16-19 BEDS
SECOND FLOOR PLAN
⊙ NURSES STATIONS

Fig. 1. Second floor plan.

partment. This is a field training center for public health personnel, one of the seven county health units in the Michigan Community Health Project of the W. K. Kellogg Foundation. Public health administrators, engineers, nurses, and educators are assigned to this area by universities to secure practical experience. For that reason the space provided for the health department is more than usually found in counties of this size.

By placing all of the beds on the second floor, it is possible to economize in the use of personnel in periods of low occupancy and eliminate duplication of service facilities. Six single bedrooms are large enough to accommodate two patients, if necessary, which would make the maximum bed capacity sixty-two. The two rooms set aside for isolation of communicable diseases, with separate bath and sterilizing and service equipment, do not have an outside entrance, but that is no longer considered necessary. It is planned to have one of these rooms equipped for the temporary care of disturbed mental patients, instead of locking them up in the local jail.

The single story unit at Paw Paw, Michigan,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FUTURE DRS. WING.
THERAPY
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LAB.
DENTIST
DENT
SUB UT.
DRS OFF.
DOCTORS OFFICES
FLOOR PLAN
0 5 10 15 20 25
32-35 BEDS

Fig. 2. Paw Paw Hospital, Paw Paw, Michigan (32-35 beds). Lewis J. Sarvis, Architect, Battle Creek, Michigan.

has maximum accommodation for thirty-five patients, excluding the newborn. This town, which is twenty miles from Kalamazoo, has a population of 1,900 and some 12,000 people live in its service area. A unit this size is compact enough for efficient operation with only one floor. The possible future addition of offices for physicians and dentists is indicated.

MEDICAL SERVICE IN THE COMMUNITY HOSPITAL

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WHILE we speak individually of medical practice, hospital care, nursing and other auxiliary services, we are relating these terms more and more to the general concept of community health. Each factor plays a significant role in the care and treatment of the sick; all are essential to the health and well-being of the community. The hospital itself does not and cannot practice medicine. Yet its facilities are being utilized to an ever-increasing degree in the actual care and treatment of patients. Let us, therefore, consider briefly the tremendous volume of service carried out in our American hospitals.

There are, at the present time within the continental limits of the United States, 6,511 hospitals registered by the American Medical Association. These have a total capacity of 1,739,000 beds exclusive of 83,000 bassinets for newborn infants. In 1945, 16,257,000 patients were admitted for hospital care (12 per cent of the total population), with an admission rate of one person approximately every two seconds. In addition, the registered hospitals gave care to 1,969,000 new born infants, a number representing one hospital birth every sixteen seconds. Equally impressive is the average census report indicating that 1,405,000 patients are regularly under treatment each day. This average, measured over a period of one year, represents the staggering total of 512,915,000 patient-days.

The general hospitals, numbering 4,744, supply by far the greatest volume of hospital service as evidenced by their report of 15,228,000 admissions or nearly 94 per cent of all patients admitted in 1945. They likewise reported 1,908,000 newborn infants, or approximately 98 per cent of the total hospital births. Only 6 per cent of the admissions occurred in the special hospital group comprising the nervous and mental institutions, tuberculosis sanatoriums, isolation hospitals and other units limited to individual hospital funtions. Significantly, however, the mental hospitals, which receive less than 2 per cent of all admissions, have 624,000 patients under treatment at all times as compared with 665,000 in the general hospital group. Thus, nearly half of the total number of hospital beds in the United States are occupied by patients suffering from mental diseases.

The community hospital should represent, in our mind, a general hospital service appropriate to the needs of the individual community. Basically, the general hospital should provide facilities for medical and surgical patients, both adult and children, maternity care and the treatment of accidents and other emergencies. If the hospital is to render a full community service, it would also be necessary that provisions be made for the temporary care and isolation of contagious diseases, tuberculosis and mental disorders, unless special hospitals and sanatoriums are readily available for this purpose. We know that the size and function of the community hospital will depend upon a number of factors: the area served, density of population, economic level, transportation facilities, distance to other hospitals and medical centers, the availability of medical service in the community, the degree of specialization and so on. Thus we find that the general hospitals vary in size from approximately ten beds to 1,000 beds or over, with corresponding variations in function ranging all the way from limited, or temporary emergency care, to the complete service offered in our fully organized hospitals.

With this background let us turn our attention to the medical service which constitutes the most important single factor in the program of hospital care. In the organization of the medical staff, there are two major considerations: (1) the legal requirement that medical service be rendered only by licensed physicians, and (2) the moral responsibility and obligation on the part of the

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Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 22, 1946.

medical profession and the hospital to determine that staff physicians are properly qualified by training and experience, and that they are proficient in the fields of practice to which they devote themselves. To qualify for licensure, a physician must have received at least two years of premedical college education, four years of instruction and training in an approved medical school, and one year of hospital internship as required by several of the state licensing boards. Even though the internship is not a uniform requirement in all states, its importance in the field of medical education has become so firmly established that well over 98 per cent of all medical graduates obtain at least one year of hospital experience before they enter medical practice.

While licensure confers the right to practice medicine in all its fields, it is obvious that medical science has become so complex and far advanced that no single physician can be skilled in all divisions of medicine. On graduation from an approved medical school and completion of a hospital internship, the physician is professionally competent to enter general practice. For specialty practice, however, he will require additional training in accordance with present standards of graduate medical education. Under the sponsorship and approval of the American Medical Association, Specialty Boards have been established in fifteen branches of medicine and surgery to evaluate the qualifications of physicians who wish to be classified as competent specialists. In general, the requirements for certification by the American Specialty Boards include graduation from an approved medical school, the completion of a year of internship, three years of specialty training, two years of additional study or practice in the selected field and, finally, a rigid qualifying examination, both written and practical. In some of the specialties, still longer periods of training are required for certification. These requirements, it should be noted, are voluntarily imposed by the medical profession itself, to improve the quality of medical practice, that patients may receive the best possible care.

It has long been recognized that the controlling board of a hospital has the right to determine who may or may not be permitted to practice in the hospital, assuming, of course, that medical licensure requirements have been fulfilled. Most hospitals at the present time operate with an "open" staff. These have, in addition to the regular attending staff, an open group to which courtesy privileges have been extended in accordance with rules and regulations adopted by the hospital. In many instances, however, limitations have been placed on the size of both the regular and the courtesy staffs, showing that the hospital is not completely open as the term would seem to indicate. Some hospitals have a limited staff designated as "closed"; others may be "semiclosed" in that courtesy privileges are extended only in certain departments.

While hospitals have the right to limit their staff, and do so in the interest of patient care, they should be careful not to exercise that privilege to the point where qualified physicians in the community are totally excluded from hospital practice. Obviously, in a large city no single hospital can accommodate all physicians, but provision should be made in the distribution of staff services so that a properly qualified practitioner may have access to at least one hospital. Hospitals have become key centers of medical practice, and modern medicine cannot be practiced successfully except with the diagnostic, therapeutic and other facilities which hospitals provide for the use of physicians. With the return and relocation of physician veterans, it is especially important that hospital facilities be made available to them not only as an aid in the re-establishment of their practice, but also in order that they may benefit from the contacts and professional association which hospital appointments afford. It is also hoped that physicians located in areas devoid of hospital service may have increased opportunities to enter into active association with nearby hospitals so that they may enjoy the benefits of staff meetings, professional consultations, increased diagnostic service and a wider experience in clinical practice. Such affiliation will be valuable not only as continuation training but as a preparation for the assumption of further hospital duties when facilities are later provided in their own community.

In the program of hospital standardization, there has been developed over a period of years, a pattern of medical organization designed to give to the patient the highest quality of medical service. The principal objective of such organization is the establishment of professional teamwork and the co-ordination of services so that individual skills may be utilized to the greatest advantage. This involves, first of all, the development and adoption of by-laws, rules and regulations defining the administrative functions of the staff, the duties of officers and committees, the organization and departmentalization of the professional service, and the maintenance of staff meetings and conferences in accordance with medical and administrative needs. The form of staff organization most satisfactory to a hospital will depend on a number of factors including the size of the institution, scope of service, number of physicians available, degree of specialization, educational functions and other items. In the very small hospital an elaborate plan is not practicable; yet there should be some authority competent to evaluate the qualifications of those who wish to use the hospital's facilities. It is particularly important that care should be exercised in the assignment of surgical privileges since it is essential for the safety of patients that both the surgeon and his assistants be properly qualified. In large hospitals the regular pattern of staff organization is usually followed with staff officers and such committees as executive, credentials, records, surgical, educational and others in accordance with hospital needs. Of these the medical executive committee is the most important as it represents the staff in the formulation of medical policies, acting also as a liaison with the hospital governing board. The credentials committee has a similarly important function in the evaluation of qualifications for staff appointment although these duties have now been simplified considerably through the certifying activities of the specialty boards.

Depending upon the size of the hospital the medical staff can usually be divided into one or more of the following groups: (1) the regular, or attending staff, (2) the courtesy staff, and (3) the consulting staff. If the hospital is small, the regular staff may consist of only a few physicians who devote themselves mainly to the general practice of medicine, obstetrics and a limited amount of general surgery. This practice will broaden, however, as the staff physicians develop interests in special fields and improve their knowledge and skill through years of experience and courses of postgraduate training. With the liberal use of consultants from nearby medical centers, the hospital will become increasingly progressive and may eventually succeed in developing a full community service. As the physicians begin to limit themselves to special fields, the organization of separate services will appear, first in surgery, perhaps, then internal medicine, obstetrics and eye, ear, nose and throat. In larger hospitals a further departmentalization may occur in accordance with clinical and educational needs, and some institutions have also established a separate department of general practice, thus giving recognition and encouragement to the large number of physicians who are centering their skill in the general aspects of internal medicine, children's service, maternity care and the medical side of surgical practice. The recognition of the general practitioner and the creation of opportunities for his development is particularly important in the continued expansion of community hospitals and medical care.

In any program of medical and hospital care liberal provision should be made for consultation service. This is particularly essential in the small community hospital where staff physicians cover a wide field of practice yet have only limited opportunity for outside professional contact and interchange of information. Any system of practice will stagnate unless there are opportunities for professional growth, continued education and the stimulating experience of professional association with other physicians. The needs of the small hospitals in this respect are worthy of special study. Perhaps, with the present ease of transportation, a satisfactory solution will be found in the organization of a regular field consultation service. In the large hospital the problem is not difficult as the individual physician may avail himself of the services of the regularly established consulting staff. He can also utilize, whenever necessary, the assistance of members of the various departments of the active attending staff.

While medical service is concerned primarily with the care and welfare of the sick, it also encompasses the aims of preventive medicine and public health, the problems of social and mental hygiene, health education, clinical and laboratory research, and the preservation and continuity of medical practice through the education of young physicians. The American Medical Association has established standards for the training of medical students, interns, resident physicians, x-ray and laboratory technicians, physical and occupational therapists and medical record personnel. These educational functions do not in any way conflict with the main purpose for which the hospital is maintained, but serve to enhance the quality of medical and hospital care.

Medical students in their last two years of training spend the major part of their time in the clinics and wards of teaching hospitals where they participate in clinical studies under the supervision of the medical faculty. The scope of this service carried out in some three hundred hospitals closely associated with medical schools is indicated by the report of over ten thousand students in the junior and senior classes. It is generally recognized that four years of professional education devoted mainly to the rudiments of medicine, do not constitute sufficient training to meet the medical needs of a community. Recent medical graduates must, therefore, be given further opportunity to consolidate their theoretical and practical experience by assuming an increasing amount of responsibility in the treatment and care of hospital patients under the guidance of a competent medical staff. The internship fulfills this purpose and serves to complete the preparation for general practice. It bears an equally important relationship to the graduate field where it constitutes an essential prerequisite for residency, fellowship and other training that may lead to certification by the American Specialty Boards. The internship is basic preparation not only for general and special practice, but also for administrative medicine, educational pursuits, research and other activities requiring a medical background. It is apparent, therefore, that hospitals and medical staffs which participate in the training of interns perform a tremendously important educational function which is directly concerned with the supply of qualified physicians for general community medical service. Seven hundred forty-three civilian hospitals accommodate about 5,500 interns annually. Under normal peacetime conditions, however, they train nearly 7,500, since many interns elect to remain for an additional year of hospital experience. Reference has already been made to the training of specialists and the certifying program of the American Specialty Boards. I wish to point out, however, that 764 hospitals approved by the American Medical Association for residencies in specialties can provide training for more than 8,000 physicians. The facilities in this field are steadily increasing to meet the educational needs of discharged medical officers.

In addition to these activities, the hospitals conduct staff meetings and conferences for the continued education of their own staff members and they also participate in postgraduate courses conducted by medical schools and hospitals throughout the country. The work carried out at the Center for Continuation Study at the University of Minnesota is a splendid example of what can be accomplished in the continued training of physicians in active community practice.

Over 1,200 hospitals have accredited schools of nursing education in which approximately 130,000 student nurses are enrolled. Nearly 200 more offer affiliated courses for supplementary training in special fields. The reports that 268 hospitals have schools for laboratory technicians, 130 for x-ray technicians, thirty-two in physical therapy, eighteen in occupational therapy and ten for medical record personnel give further indication of the enormous contribution made by hospitals and medical staffs in the educational field.

One of the most valuable activities of the medical staff is its contribution to clinical research. Physicians working individually or in co-operation with other staff members or departments are constantly striving to advance the quality of medical service, improve present methods and procedures and develop new and more efficient techniques. New discoveries in medicine are carefully evaluated in hospital practice where their effectiveness and use can be accurately determined in relation to other clinical procedures. Laboratory research and the clinical application of new discoveries have added many a brilliant page to the annals of medicine—milestones of accomplishment—vaccination, the control of puerperal infection, aseptic surgery, insulin, blood plasma, endocrine therapy, sulfonamides, and penicillin, to mention only a few. Medicine cannot rest on its laurels, however; it must go on to other problems now pressing for early solution: the control of cancer, heart disease, mental diseases, tuberculosis and many others. The future holds promise in co-operative research and in continued clinical investigation. It will also require our support and co-operation for upon us, yes, all of us, the medical profession, the hospitals and the public, rests the responsibility for the continued maintenance of high standards of medical service and hospital care.

MODERN HOSPITAL CONSTRUCTION

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IN discussing modern hospital construction it is necessary to consider prevailing and anticipated techniques and practices to lay the foundation for comments and recommendations. It is my intention to discuss, principally, improved and needed facilities to carry out the new and advanced techniques and practices in treating and caring for the sick efficiently and economically.

The hospital long ago ceased to be a special boarding house for the sick where many people went only at the point of death. It has become a scientific institution for the restoration of health. As medical science advances in knowledge and achievement, the hospital must become more efficacious. It is basically a work shop for the physician and primarily an aid to medical practice. Besides being a scientific laboratory, it is also a social, educational and business institution. All these factors must be considered and coordinated into a functional plant.

The physical requirements of hospital structures have changed phenomenally in recent years. Development of new diagnostic and therapeutic methods has brought about the need for new facilities and new equipment. Broader concepts of both public health and hospital service are exerting their influence on hospital design. Improved methods of hospital administration have created new problems to be solved through modern construction. New materials and advances in construction design have resulted in basic revisions in building plans.

While it is essential to provide adequately for the doctors' and patients' needs, it is equally important to provide comparable facilities for the personnel operating the institution. As humanity grows more enlightened, it relatively becomes more sensitive, expects and is entitled to more consideration. Accepting this concept, as we must, the hospital should provide sufficiently for the efficiency, comfort and pleasure of its administrators, supervisors, technicians and other employes, skilled and unskilled.

A hospital is a purely functional building combining architecture and medicine. Naturally, the architect cannot know the practice of medicine; nevertheless, he must design a building wherein medicine may be practiced efficiently and economically. To accomplish this, he must have a working knowledge of hospital procedure and of the problems confronting the hospital administration and staff.

Before commencing the design, the architect should consult in detail with the medical and administrative staffs to find out the policy and procedure which the hospital wishes to continue or introduce in the new building.

Well designed and appointed modern hospitals, strategically located in cities and communities will attract outstanding doctors, administrators, and technicians, and will receive the greatest patronage. Your doctors are loath to settle in areas where hospital facilities are obsolete or lacking.

The design of most of the old, and many of the new, small rural community hospitals is very poor functionally and esthetically. This in most instances can be attributed to the copying of improper and obsolete features from poorly planned buildings.

The typical small hospital is a two-story and basement structure, having an elevator and dumbwaiter. The kitchen, dining room, laundry, storage and boiler room are always placed in the basement; the office, delivery room, nursery and some patient rooms on the first floor; operating room and more patient rooms on the second floor. In some instances both the operating and delivery rooms are on the second floor and use the same scrubup and sterilizing facilities. The laboratory, x-ray, central sterilizing and supply rooms are usually scattered throughout the building. This kind of hospital, because of the necessity for an elevator, two nursing units with two sterilizing rooms, two toilet rooms, two baths, two food serving rooms with dumbwaiter for only a few patients, and the technical and service units scattered instead of consolidated, makes it difficult and expensive to operate.

A new concept is a one-story structure with floor a few inches above the exterior grade for all patient, administrative, technical and service departments, and a basement only large enough

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Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 22, 1946.

Mr. Magney is an architect of Minneapolis who specializes in hospital construction.

for the heating plant. This plant eliminates the elevator, dumbwaiter, exterior and interior stairways except to the basement, food serving rooms, duplicate nursing units and auxiliary services, all of which make a more efficient and economical hospital to operate. This general plan is also advantageous for unit expansion to provide for the growing needs of the community.

It is not my desire to review familiar features and elements of hospitals, but to point out important items, many of which are missing in existing institutions and in plans for contemplated structures. It is hoped that the following comments will be constructed as constructive and will serve as helpful suggestions when formulating programs for the modernizing and extending of existing hospitals and for new plants.

A modern hospital should have:

An emergency receiving and operating room.

A medical records room adjacent to the staff entrance and lounge.

A doctors' "in" and "out" system.

A doctors' visual paging system.

Doctors' dictating rooms in surgical, obstetrical, and clinical suites.

Electrical plug-in receptacles of sufficient voltage in all patient's rooms for portable X-ray apparatus and heating pads.

Alcove in main entrance vestibule for storing visitor's rubbers, overshoes, and umbrellas.

Adequate, properly located, alcoves for storing stretchers and wheel chairs.

Retiring room in connection with the general waiting lobby.

Lavatories in patients' rooms or in connecting service rooms.

Individual clothes closet for each patient.

Adequate, conveniently located, bedpan emptying and cleaning facilities. I have observed bedpans emptied into ordinary water closets and rinsed in patient's bathtub.

Isolation rooms with toilet and shower bath compartment and connecting utility room.

Rooms acoustically treated and equipped with safety devices for temporarily taking care of psychiatric patients.

Visitors' waiting alcoves or rooms on patient and technical floors.

Father or family room on obstetrical floor.

Telephone booths in public lobby and on patient and technical floors.

Private rooms at stations for nursing and technical supervisors.

Nurses' rest and conference room at nursing stations.

Coat rooms on patients' floors for student nurses.

In large hospitals, class rooms on patient floors and in technical departments.

Better scrub-up facilities for female surgery and obstetrical technicians and assistants.

Room for storing anesthesia supplies and equipment, and in large hospitals, office for anesthetist.

In large hospitals, surgical recovery rooms.

Room for storing and servicing mobile electric and hydrotherapy treatment units.

Linen chutes from operating and delivery departments to receiving closets in basement.

Cleanup rooms in operating and delivery departments equipped with clinic sinks for disposal of technical refuse, laundry tray with drainboards and wringer for cleansing soiled linen before depositing in hamper, cabinet counter, sanitary waste receptacles, and waste paper receptacles.

General cleaning closets of sufficient size for slop receptors and mopping carts.

Receptor is preferred to slop sink because it can be made large enough to receive pails and mops and have curb low enough for draining the carts into them by gravity.

Room with outside window on patient floors for storing and servicing flowers, equipped with counter cabinet with sink and shelving.

In medium to large hospitals, treatment rooms on patient floors.

In large hospitals, pneumatic tube systems for conveying charge slips from nursing stations, laboratories, pharmacies, surgery, obstetrical, X-ray, and other departments where charges originate, to billing machine at cashier's station.

Rooms for admitting and discharging patients and discussion of credits.

Facilities for cleaning and storing garbage cans.

Oxygen piped from centrally located tanks to a few or all patients' rooms, nurseries, operating, and delivery rooms.

Pediatrics department in medium size and large hospitals.

One of the most essential and most lacking elements in hospitals is the provision of lavatories for hand washing. They should be provided in food preparation and serving rooms, nurseries, labor rooms, patient bed rooms, toilet rooms, utility, and other service rooms.

Lavatories should also be conveniently located in general corridors for doctors' hand washing, preferably placed in small rooms with double acting, self-closing doors, to prevent visitors using them as cuspidors and cigarette and cigar depositories. Incidentally, what a wonderful thing it would be if some ingenious person would develop a drinking fountain that could not also be used as a spittoon.

All lavatories, except those for domestic purposes, should have gooseneck faucets for filling receptacles and hand washing in running water, and those in nurseries, labor rooms, and doctors' use, must be foot-, knee-, or elbow-operated.

In the past, the general practice for medium size and large hospitals was to place the surgical department on the top floor and the obstetrical on next to the top floor, and in small institutions the delivery rooms on first floor and operating rooms on second floor. The central sterilizing and supply room and pharmacy were usually placed in the basement, the laboratory and x-ray department any place where space was available.

The present tendency in medium to large institutions is to place the operating and auxiliary rooms, x-ray department, laboratory, pharmacy, and central sterilizing and supply room on the second floor and the obstetrical department on the third floor. This consolidation of technical units makes it more convenient for the doctors and technicians, simplifies the piping to equipment, conserves labor and elevator service, reduces construction and general operating costs and releases the upper floors for general patient rooms where maximum quiet, light and air is mostly needed.

In small hospitals it is becoming general practice to place technical and service departments on the first floor, which is more convenient for doctors and technicians. It conserves space, labor and elevator service, resulting in reduced operating costs.

The minimum economical nursing unit for mixed, private, semi-private, and ward patient rooms is from twenty-five to thirty beds. Greater economy can be effected by having from two to four nursing units served from one nursing station providing the floor is arranged in wings diverging from the station. By this arrangement one supervisor can administer all units, while if they are remotely located, it would require one more supervisor for each additional unit. It would also reduce the number of floor nurses necessary to take care of the patients during inactive and semi-inactive periods. A recent survey of small hospitals revealed that two employes could be saved by having all the patients on one floor instead of divided on two floors. The consolidation of nursing units not only saves personnel but eliminates duplication of space and equipment and the saving effected in the cost of construction in many instances would be sufficient to provide additional needed facilities that could not otherwise be obtained.

The patient rooms necessarily serving as combined bed rooms, living rooms, and dining rooms, should be large enough for the equipment and permit of all the varied activities of the patients, doctors, nurses, and others and must have adequate maneuvering spaces for stretchers and wheel chairs. They should be placed so the window outlook is attractive and, if possible, oriented to admit desirable and exclude undesirable prevailing winds. The preferred exposure in this section of the country is the south; next is east, then west, and finally north.

Private rooms for either one or two beds should be about 11.5 feet wide by 15 feet deep, four-bed wards 20 feet wide by 15 feet deep, the depths in both being from exterior walls to corridor partitions or closet enclosures at corridor partitions. An individual closet of sufficient size to accommodate clothing, traveling bag and other personal accessories should be provided for each patient. Having all private rooms of uniform size and large enough for two beds gives flexibility to the capacity of the hospital and provides for emergencies.

Every room should be equipped with a lavatory unless a water closet and lavatory compartment is connected to the room or pair of rooms, in which case the water closet should be provided with bedpan cleaning equipment.

While the sanitary service compartments cost more than lavatories in rooms, the additional expense is justified by the better nursing care, reduced labor in bedpan service, and private toilet facilities for the patients.

It has become general practice to store the bedpan and related accessories in the bedside cabinet regardless of whether cleaned in a private compartment or general utility room. This insures individual equipment for each patient, lessens the possibility of cross infection by contact and makes it unnecessary to sterilize the bedpan after each usage, which saves labor and sterilizing costs.

One of the most noticeable changes in hospital technique is the caring for new born babies. Until recent years the general practice was to remove the baby from the bassinet to bathe it in a utility room adjoining the nursery. It is rapidly becoming common practice to bathe a child in its own bassinet, which has been designed especially for that service, equipped with cabinet and drawer for the individual clothing, supplies and accessories.

A combination nurses' work room and doctors' examination and treatment room is placed between two nurseries and made accessible from the general corridor. In small hospitals the service room is placed between the general and premature nurseries, and when the incubators are retained in the general nursery the suspect nursery replaces the premature. In large hospitals, it is customary to have the service room between two well babies' nurseries and another service room between the premature and suspect nurseries. The well babies are brought in the bassinets to the doctors for examination and treatment in the service room and the doctor never enters the nursery unless the incubators are in this room, in which case it would also be necessary for others not on the staff to enter the room. There seems to be a divided opinion regarding this practice, some maintaining that it is objectionable and others that it is immaterial. It is the general practice for doctors to examine the premature and suspect babies in their respective nurseries; the suspect nursery, of course, must have an ante-room with gowning, sterilizing, and cleaning facilities. The modern nursery units are correlated into groups with windows between them for observation; also windows between the service room and suspect nursery. I know, of course, that nurses for the general babies never take care of the suspect babies. All nurseries except the premature and suspect units should have visitors' observation windows with draw curtains or other means of providing seclusion when necessary. The nursery should have oxygen piped from centrally located tanks.

It is generally considered not necessary in this territory to air condition or even mechanically ventilate nurseries for new born babies and very few installations have been made. Whether it is desirable or not is a matter of opinion, but one sure thing—if it is done—it must be done with extreme care. Babies being susceptible to infections and sensitive to temperature fluctuations and drafts, a poor mechanical system would be more detrimental than beneficial. It is necessary, however, to provide mechanical means for adequate controlled heat and humidity. Germicidal ultra-violet lamps for sterilizing the air have been used for some time in nurseries with excellent results and are recommended for your consideration.

In recent years the sizes and appointments of general operating and delivery rooms have become quite standardized for both large and small hospitals, varying from 15 to 16 feet in width and 16 to 18 feet in length.

Rooms for fracture work, because of the specialized equipment, should be at least 2 feet longer.

Cystoscopic rooms usually are made too small —they should be almost as large as standard operating rooms.

Each room should be provided with a water syphonic aspirator, compressed air piping from a compressor remotely located to exclude mechanical noises, oxygen piped from an interconnected tank conveniently located elsewhere for servicing, all terminating in separate wall cabinets for housing valves, gauges, and hose.

There should also be a secondary clock, two x-ray film viewing cabinets, four electric explosion-proof plug-in receptacles, and cabinets for storing supplies, special instruments, and operating table accessories. The floors should be grounded with brass or aluminum grids to prevent explosion.

For general illumination there should be four vapor-proof electric ceiling lights and an electric ceiling operating light which could be of vapor-proof type if the room is properly ventilated, but must be explosion-proof if the room is inadequately ventilated. General and operating room lights should be separately controlled by explosion-proof wall switches.

Doctors' scrub-up rooms in connection with operating rooms are preferably placed adjacent to the general corridor and connected to one or two operating rooms. These should contain at least two knee-, foot-, or elbow-action scrub-up sinks, wall shelf and mirror above sinks, liquid soap and alcohol solution dispenser, secondary clock, and observation window in partition to operating rooms. Sinks should be installed on partitions separating this room from the sterilizing equipment space and be placed far enough apart to provide ample arm space when scrubbing, which also would prevent the doctors' splashing each other.

The sterilizing room in connection with operating rooms should, when possible, be placed at the exterior building wall and be provided with a window and connected with one or two operating rooms. It should have a cabinet counter with a sink placed at the window side of the room. At the opposite side of room, concealed in an equipment space placed between this room and the scrub-up room, there should be an autoclave pack sterilizer, autoclave instrument sterilizer, double water sterilizer, water still, and a blanket and solution warmer, all steam operated.

Doors between scrub-up, sterilizing and operating rooms and corridors should have vision panels and be hung on double acting spring hinges, making it possible to open them in either direction without touching with the hand. These should be self-closing, and the rooms illuminated by vapor-proof electric ceiling lights controlled by explosion-proof wall switches.

The equipment space between operating, scrub-up, and sterilizing rooms should be of ample size for receiving and servicing the sterilizing and other equipment, recessing of operating room clocks, viewing, aspirator, compressed air and oxygen cabinets. Air in the space should be mechanically exhausted to remove the heat and vapor generated by the equipment. Space permitting, it is a good place to house the ventilating or air conditioning equipment for the operating room.

It is considered good practice to have the delivery and their scrub-up and sterilize units identical with the operating and related rooms.

It is generally considered that the best system for heating a hospital is steam or hot water, or a combination of both, using steam for air conditioning and ventilating coils, sterilizers and kitchen and laundry equipment, and hot water for room radiators and convectors. Hot water has come more and more into favor because it is a more uniform heat, is more easily controlled, and it is possible to conceal most of the piping. For maximum economy and comfort, the system must be controlled by either room or zone thermostats. Individual room control is the most selective, but more costly to install and to maintain. The oriented zone controls are less costly to install and maintain, give satisfactory results, and eliminate to a large extent the human element in the controlling.

There is considerable difference of opinion on the needs for and methods of ventilating and air conditioning hospitals. Fortunately, the minimum requirements for mechanical ventilation of inside sanitary rooms and rooms where under certain conditions anesthetizing gas is used, is fixed by law, but mechanical ventilation of any other kind of space is not mandatory. In most hospitals, the patient rooms have no mechanical ventilation and very few have any completely air conditioned rooms. I question the necessity or even the desirability in this part of the country of cooling patient rooms except a few requiring absolutely controlled atmospheric conditions, but I do favor properly ventilated and humidified rooms. The reasons for my indecision are: (1) the average summer has only a few extremely hot, humid days and the majority of doctors, patients, and nurses prefer to have the windows open in nice moderate weather; (2) will the benefits of mechanicaly cooled air more than offset the shock when arriving and leaving the hospital in warm, humid weather? (3) will the cost and mainenance of the mechanical installation be justified by the questionable benefits derived?

If a ventilating or air conditioning system is installed, it should be of a type that will deliver only fresh, clean, treated air directly to each patient room. No air should be recirculated, but mechanically exhausted directly from the room or through connecting service rooms. A recirculating system will distribute foul, contaminated, odorous air to all rooms connected to the system.

One of the most simple and effective systems for ventilating a hospital is to deliver filtered, heated, and humidified fresh air to all general, technical, and service corridors and exhaust a lesser amount through adjoining rooms to the atmosphere.

Keeping the corridors under pressure and exhausting through rooms will prevent to a large extent the foul, contaminated, odorous air entering the corridors.

Toilets, utility, and other sanitary rooms should have at least ten air changes per hour, accomplished by obtaining fresh air, when possible, from the corridors and mechanically exhausting to the atmosphere.

Operating, delivery and auxiliary rooms, although not required by law, should be mechanically ventilated and, when possible, completely air conditioned with systems changing the air at least twelve times per hour. For ventilating only, the fresh air should be cleaned, heated, and humidified, and for air conditioning it should be also cooled and dehumidified. The treated air should be discharged directly into the operating and delivery rooms—half the amount exhausted near the ceiling and the rest near the floor. Some should be exhausted directly and the rest through the scrub-up and sterilizing rooms; then into the sterilizing equipment space where it will remove

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THE SURVEY OF HOSPITAL FACILITIES

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HOSPITALS in Minnesota are being asked to participate in two surveys. The first is sponsored by the Commission on Hospital Care in all the states and territories of this country, and the second was developed by the American Academy of Pediatrics for nation-wide conduct.

The first study will be a detailed survey of existing facilities to include all general and specialized hospitals, sanatoria, maternity homes, nursing homes and homes for the aged providing chronic and convalescent care. This survey will be conducted in accordance with the methods of the Commission on Hospital Care, a privately endowed public service agency set up by the American Hospital Association. This commission, composed of physicians, hospital administrators and nurses, has had the thoughtful assistance of full-time specialists in the development of an authoritative method for conduct of the study. This method must be used in all states of the nation if the objective of the study is to be attained. The objective is the development of a uniform and reliable body of information for the planning of hospital services for all types of patients in all areas of the country.

In addition to the Commission on Hospital Care (CHC) study, the American Academy of Pediatrics (AAP) is sponsoring a study which covers hospital services for children as well as medical and dental care and public health programs. The AAP study is sponsored in Minnesota by the State Medical Association. It is seeking only supplemental information on hospital services which is not covered by the CHC study. Both the American Academy of Pediatrics and the Commission on Hospital Care have urged that this second study be integrated with the primary study of hospitals so that duplication of effort may be eliminated. To this end the work methods have been coordinated on the national level, and the AAP schedules of information are prepared with section numbers corresponding to those of the CHC study. The hospital superintendents will find the schedules for this second study enclosed in the same cover with CHC schedules.

Ultimately, two factors will control the success of this survey of hospital facilities: completeness and accuracy! The factor of completeness will be satisfied only if all institutions participate. The factor of accuracy will be satisfied only if all institutions give correct information on all applicable sections of the schedules. Work plans for conduct of the survey are being prepared to satisfy as nearly as possible the requirements of these factors.

Schedules of Hospital Information

The schedules of hospital information will be mailed to approximately 450 institutions as rapidly as possible during the period from May 10 to May 30. The general plan for the mailing and collection of schedules is as follows: The institution will receive one copy of the schedule which is to be used as a work copy in preparing the first draft of information. The institution is to return this copy as soon as completed to the state survey office, Minnesota Department of Health Building, University Campus, Minneapolis 14. After review and approval, the state survey office will return this draft of the schedule to the institution for completion as may be necessary and for retention as the institution permanent copy. At this time a second copy of the schedule will be mailed to the institution for transfer of the final information and return to the state survey office. This final copy of the schedule will be sent to the Commission on Hospital Care, Chicago, for tabulation and preparation of tables of information.

A brief perusal of the schedule will convince the hospital superintendent that the completion of the information will involve some work. This should be recognized at the start and a plan made to accomplish the job in a prompt and efficient manner. The institution superintendent is responsible for the completion of the schedule, but for the preliminary study, as well as in the actual preparation of the information, it is suggested that the work copy of the schedule be separated into appropriate sections for assignment to the

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various department heads such as finance, housekeeping, nursing, medical records, et cetera.

Regional Meetings of Hospital Superintendents

Plans are being made to provide every assistance possible to the institution. This assistance will begin with regional meetings of the superintendents in seven convenient cities of the state. The mailing of the schedules will be timed to permit a period of one week to ten days for study in preparation for the meeting. Hospital superintendents are urged to attend the meeting of their choice and bring the schedules and questions with them to the meeting. It is suggested that the questions be written down at the time they arise so that none will be overlooked. Each hospital superintendent will receive an invitation to the regional meetings and he is urged to return promptly the postcard indicating the meeting chosen. All meetings will start promptly with a luncheon for which there will be a nominal charge.

Later on, it is planned to provide a field staff for visits to hospitals to interpret the study methods and purpose. This staff will be composed of the hospital licensing staff and the field advisory nurses of the Minnesota Department of Health. These field representatives will work on a regional basis and will make visits to the hospitals and related institutions, as necessary, during the period of preparation of the information from June 1 to September 30, 1946. If a question in the schedule is not clear, the institution superintendent should not wait for a visit from a field representative. These questions should be submitted immediately in writing to the survey office. It is important that the schedules of information be completed as promptly as possible.

Review of Schedules in Survey Office

It should be emphasized that the value of the completed survey will depend largely on the accuracy of the information submitted. Because of the complexity of the schedule of information, it is desirable to review the information to insure uniformity of interpretation of the questions in the schedule. This review will be made in the state survey office on the work copy of the schedule which the institution superintendent will send as soon as completed. If necessary, the work draft will be returned to the institution for further preparation before completion of the final copy.

Report on the Survey to Be Prepared

As the survey of existing hospital facilities progresses, a simultaneous study will be made of the social, economic, geographic and population factors related to the need for additional hospitals in the state. The services of a statistician are being obtained to supervise the collection and study of this information. Combined with the existing hospital facilities data, this information will be used to prepare a report by the Hospital Planning and Survey Committee appointed for the State of Minnesota by Governor Edward J. Thye. This report will be made available to the superintendents of all hospitals, to physicians and other groups for the planning for hospital services.

MODERN HOSPITAL CONSTRUCTION

(Continued from Page 1125)

the generated heat and vapor, and then discharged to the atmosphere. The operating and delivery rooms should be individually temperature controlled.

If the air is changed at least twelve times an hour, and if the operating lights cannot be turned on unless the ventilating and air conditioning system is in operation, according to good authority there should be no danger of explosion caused by vapor-proof light fixtures. In rooms not having the required number of air changes, explosion-proof type operating lights must be used.

Food preparation and serving rooms should have the air mechanically exhausted to remove heat and odors, also to prevent odors from entering other rooms. Air for laboratories and autopsies should be extracted by separate systems.

Hospital buildings—large and small—should be fireproof, constructed of durable materials to assure maximum safety, and minimum depreciation and maintenance. The windows should be of type, sizes and placement to provide desired light and controlled ventilation. The general design should be modern, simple, dignified, and appropriate for the institution.

MODERN TREATMENT OF EMPYEMA

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PERHAPS it might be well to preface any discussion of the modern treatment of empyema by the statement that there has been no change in the fundamental principles underlying its treatment for many years. In fact, a number of the lantern slides used in this discussion were made for a presentation before the Minnesota State Medical Society in 1937, which was published in MINNESOTA MEDICINE in August of that year. The empyema picture, however, has changed considerably, as has the emphasis on certain aspects of its treatment, and it is these variations rather than any new method or technique which I shall discuss with you today.

Empyema develops almost invariably as a secondary complication to some other process. The causative factors in its development may be listed somewhat as follows:

1. Pneumococcic pneumonia.
2. Other types of pneumonia.
3. Infectious disease: influenza, scarlet fever, measles, tonsilitis, typhoid fever.
4. Bronchiectasis.
5. Pulmonary abscess.
6. Pulmonary tuberculosis.
7. Pulmonary infarct.
8. Penetrating wounds of the chest.
9. Pericarditis.
10. Diseases of the abdomen: subphrenic abscess, abscess of the liver.
11. Perinephritic abscess.

The specific etiological agents causing empyema vary considerably with the epidemics of respiratory disease and vary from season to season as well as from year to year. They include the following:

1. Pneumococcus.
2. Staphylococcus.
3. Streptococcus: hemolytic, viridans.
4. Mixed organisms: aerobic, anaerobic.
5. Mycobacterium tuberculosis.

The behavior of a given empyema may vary widely depending upon the causative organism. With the development of specific chemotherapeutic agents, this knowledge has become all the more important, as the selection of the proper drug must be governed by a knowledge of the type of organism present.

The fundamental principles underlying the treatment of empyema have been recognized for many years and remain essentially unchanged. They may be listed as follows:

1. Adequate drainage of the pleural abscess.
2. Avoidance of early pneumothorax before the formation of adhesions or exudate has stabilized the mediastinum and fixed the the lung to the chest wall, forming a local pocket.
3. Rapid sterilization and obliteration of the abscess cavity.
4. Maintenance of proper nutrition of the patient.
5. The avoidance of chronic empyema.

No matter what variety of treatment is chosen it must meet the fundamentals outlined above if it is to be consistently successful. The matter of maintenance of the patient's nutrition is all too frequently overlooked. The increased metabolism brought about by the fever and the heavy protein loss from the extensive suppuration must be compensated for by a diet adequate to more than meet the losses incurred. It is well to remember also that few cases of empyema are cured until the pleural cavity is completely and permanently obliterated, although the newer chemotherapy enhances the chances of cure without obliteration of the pleural space.

Treatment of empyema may be of three general types:

1. Aspiration by a needle with or without irrigation, or instillations.
2. Closed drainage—tube drainage.
    - Intercostal
    - Transcostal
        - Without irrigation
        - With irrigation
            - Saline
            - Anticoagulants

- With irrigation (cont'd)
  - Fibrin solvents
  - Sulfonamides
    - Penicillin
  - Syphonage
  - Irrigation and suction.
  - Tidal irrigation.
  - Tidal irrigation and suction.

3. Open drainage.

Such an array of methods may leave the physician somewhat in doubt as to the proper one to select for the individual patient. Fundamentally it is not the method but its proper utilization which is important. Recovery in many individuals might be brought about by the use of any or all of the methods if proper attention were given to details. One should choose the simplest method which will produce the desired result, rather than become wedded to any one particular type of procedure. The more complicated and exacting types of treatment may prove perfectly adequate in a large, well-staffed hospital whose personnel is thoroughly trained in all of the details necessary for success, but the same method may give very disappointing results in the hands of the busy practitioner who has so many other demands on his time and energy that he cannot devote all of his time to making one complicated gadget work.

Changes in the Empyema Picture

The past few years have seen definite changes in the clinical picture of empyema, brought about largely through the therapeutic, prophylactic and indiscriminate use of chemotherapy. These changes include the following:

1. Reduction in the normal incidence of empyema by early control of the severe lung infections.
2. The survival of a greater number of very seriously ill individuals who live to develop pleural complications.
3. The formation and persistence of thin serous effusions which absorb slowly.
4. The deposit of fibrin which binds down and fixes the lung.
5. The masking of symptoms so that pockets are missed completely.
6. Late development of pleural abscess after apparent recovery.

Some of our difficulties arise from the promiscuous use of sulfonamides by self-medication or as passed out indiscriminately for "colds," in which the action of the chemotherapeutic agent so masks the original picture that no clinical help can be obtained from the history. The problem of determining whether a given clear effusion is the result of tuberculosis or an unrecognized malignancy or merely an acute pleural infection more or less submerged by specific therapy presents a differential problem which is not easily solved. The effusions complicating pneumococcic infection of the lung treated extensively by sulfonamides tend to be clear, serous, of low cell and high fibrin content, and sterile to ordinary culture methods. They do not absorb readily, the fibrin becomes deposited within the pleural cavity, binding down the lung and forming multiple pockets. After the concentration of the sulfonamide has become reduced and its effect has worn off, bacteria present in a state of more or less suspended animation slowly regain their virulence and produce a late purulent effusion. To carcinoma and tuberculosis previously recognized as causes of sterile pleural effusion must now be added the sulfonamides. Penicillin is less of an offender in this way as it does not enter the pleural cavity in concentrations adequate to control infection. With the use of penicillin locally injected into an empyema cavity, however, we again encounuter the clear effusion, slowly clearing and of high fibrin content, likely to coagulate on pleural surfaces.

Aspiration

Aspiration in the treatment of empyema has both diagnostic and therapeutic possibilities. Diagnostically it enables us to determine (1) the causative organism, (2) the character of the exudate and its periodic change, and (3) the limits of the empyema pocket. Therapeutically it possesses distinct merit, but it has its disadvantages, failures and shortcomings, not the least of which is the fact that its use can become a fad, frequently used in an unintelligent and inadequate manner. It has its place in the treatment of all empyemas but its use as a sole therapeutic procedure is seriously limited by a number of facts. The best results from its use as a sole therapeutic procedure are usually obtained (1) in infants and small children, (2) in the treatment of early empyema, (3) in patients with low vital capacity,

(4) in the treatment of tuberculosis empyema, where external drainage of any type is to be studiously avoided, and (5) in the gradual removal of large accumulations.

The field of usefulness for aspiration as a single treatment for empyema has been extended in the following conditions: (1) in empyema of the newborn; (2) in infants and small children; (3) in a clear effusion (potential empyema) following pneumonia under intensive chemotherapy; (4) in secondary infection empyema, particularly staphylococcic in tuberculosis patients being treated by artificial pneumothorax; (5) in tuberculous empyema without bronchial fistula, but complicated by secondary infection with organsims susceptible to modern chemotherapeutic agents; and (6) in extrapleural empyema.

Empyema of the newborn, previously such a fatal condition, may now respond to frequent aspirations, instillation of penicillin, and rapid expansion of the lung. A number of empyemas in infants and small children, particularly those due to the pneumococcus and staphylococcus, may be controlled by similar measures. Secondary infection empyema complicating artificial pneumothorax for the control of pulmonary tuberculosis may now be controlled by frequent aspirations, irrigations with saline, and instillation of penicillin or sulfonamide solution, at times without loss of collapse. Again the infection may be brought under control but with the loss of some of the effective collapse formerly maintained. In similar manner secondary infection in an extrapleural pocket surgically created for the collapse of a tuberculous lung lesion may be controlled by the judicious use of aspiration, irrigation, and penicillin or sulfonamide instillations, and the collapse maintained by extrapleural pneumothorax or oleothorax. Aspirations must be carried out frequently, however, in order to bring about such results, daily if necessary, and must be quite complete and supplemented by irrigations with sterile saline to remove all sediment and unreachable fluid by dilution. If the fluid is of high fibrin content the injection of sodium citrate in amounts sufficient to render the residual fluid incapable of coagulating may be of value.

The development and persistence of a clear effusion following pneumonia in the patients intensively treated with sulfonamides or penicillin (potential empyema) offers a golden opportunity for successful treatment and obliteration of the pleural space by aspiration alone before the effusion becomes purulent. The absorption of fluid by the damaged pleura is a relatively slow process. Fibrin is deposited steadily and definite fixation of the collapsed lung is to be expected if it is permitted to remain *in situ*. The temptation to discontinue aspiration too soon, when the fluid is clear or only slightly cloudy and small in amount, in the hope that the patient will absorb the remainder, is one which must be combated energetically. We know by sad experience that these effusions do not absorb readily and that they remain dormant for some time until the effect of the chemotherapeutic agent has worn off, and then a number of them become purulent and chronic.

Certain other dangers and handicaps or complications to continued aspiration must be recognized and appreciated if this type of treatment is to be used. If air is allowed to enter the pleural cavity through the unguarded needle during aspiration additional collapse of the lung will occur. Trauma to the lung by too deep puncture or by scratching the lung with a long beveled needle may result in air leakage and accidental collapse of the lung (accidental pneumothorax). This is undesirable in the aspiration treatment of an effusion. Only a short beveled needle, or a cannula of a Potain type should be used for aspiration, and deep puncture is always to be avoided. Repeated needling of the pleural cavity may be followed by pleural bleeding from injury to intercostal vessels or to the lung itself with additional fibrin deposit or clotting to interfere with later aspiration or to be a factor in binding down the lung. The dangers of chest wall contamination following repeated needling must be borne in mind. This is particularly likely to develop with tuberculous fluids or putrid infections and may result in chest wall abscess, cellulitis or sinus formation.

One of the chief dangers in using aspiration as a sole treatment for empyema lies in continuing it beyond the stage when it is accomplishing the desired results. If difficulty is encountered in obtaining fluid, or if it can be obtained in small amounts only at various puncture sites and complete evacuation of the pocket cannot be obtained, or if the patient is not responding adequately to this type of treatment, another should be substituted promptly. The physician should not permit himself to become so wedded to one type of treatment that he will not recognize the indications for substituting another one. It is no crime to switch from the aspiration to a closed or open type of drainage at anytime that it is indicated, but it is nothing short of criminal to persist in an unsatisfactory type of treatment and to permit the lung to become bound down or a chronic pocket to develop, by the persistent use of a pet type of treatment which is not accomplishing the desired results. We are already seeing chronic empyemas and residual pockets developing under the very eyes of the attending physician.

Closed Drainage

Closed drainage may be substituted for aspiration at almost any stage of the treatment while the fluid is still thin enough to run or be aspirated through a catheter. It possesses all of the advantages of aspiration plus the additional advantage that it does not require repeated puncture of the chest wall and that aspiration can be done more completely and at more frequent intervals than through a needle. Aspiration, irrigation, instillation and even continuous suction may all be utilized by this method. The old argument that it does not remain closed is no longer tenable. If the skin incision made for the insertion of the trocar and cannula is no longer or even slightly smaller than the diameter of the trocar, and if the catheter used fits the cannula snugly, an airtight seal is obtained which will remain airtight for a long period of time if the catheter is tied in place at the skin surface with cross-ties of heavy silk so that it cannot move in and out of the chest wall. The author has had numerous instances where a catheter so used has maintained an airtight seal for weeks and months, even in the presence of tuberculous infection.

The catheter method of drainage permits rapid removal of pus and permits the irrigation and washing out of sediment and fibrin or clots as frequently as is necessary, and affords a means for the instillation of a fibrin solvent, a sulfa suspension, or a penicillin solution to more rapidly sterilize the pocket. Where it is desirable to maintain negative pressure in the pocket the use of a simple syphon system is as foolproof as any and requires less attention than more complicated mechanisms. If necessary, continuous negative pressure by regulated motor suction may be applied to maintain constant drainage and expansion of the lung. With catheter drainage as with aspiration alone a small pocket which is not completely healed at the time the catheter is removed is likely to remain. This may heal spontaneously but may refill and be the source of a small, chronic empyema pocket. Rib resection to bring about obliteration of this pocket is frequently advisable.

Open Drainage

Open drainage in empyema treatment has always had its advocates, and justly so. Where indicated it is probably the most foolproof and most satisfactory type of empyema drainage. It has no place in the treatment of early empyema, for a thin effusion, for the patient whose lung is not bound down or the pocket localized, or for the treatment of uncomplicated tuberculous empyema. For localized abscess pockets, for the extensive empyema with thick creamy pus, for the patient with large fibrin deposits, and for the treatment of residual pockets after aspiration and catheter drainage, it has no equal. When so used it carries with it little or no risk and gives the best chance of complete obliteration of the empyema space. Its use permits breaking down of accessory pockets and removal of fibrin masses, and a complete removal of all exudate from the pleural cavity. The drainage, however, must be dependent, free and adequate, and must be maintained until the pocket is obliterated for complete results.

The wartime experience with massive clotted hemothorax has again revived interest in the almost forgotten operation of decortication. Its early use in this condition, before fibrous tissue replacement of the fibrin has occurred and a plane of clearage can still be readily established, has given very satisfactory results. There are similar indications for decortication in empyema patients who present a clotted fibrinothorax from empyema, a condition now encountered more frequently in patients following intensive chemotherapy. In such circumstances decortication performed early may bring about expansion of the lung and prevent serious crippling of the lung which otherwise would follow.

CLINICAL-PATHOLOGICAL CONFERENCES

THE PRACTICAL APPLICATION OF NEW DEVELOPMENTS IN BLOOD GROUPS AND TYPES

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This represents an attempt at summarizing and simplifying the features of blood groups and types which have practical applications in the practice of medicine. It is essential for us to review certain basic features of these blood elements before entering upon a discussion of their more important clinical uses in females, newborn infants, and males.

General Considerations

Although other groups and types of blood are known or will be discovered, the chemical substances in the red blood cells A, B, O, M, N, P, Rh_o, Rh', Rh'', Hr_o, Hr', and Hr'' cause 98 per cent or more of our transfusion and pregnancy difficulties. Most of these factors have been proved the cause of transfusion reactions and pregnancy sensitization and its complications. It would seem that only time is necessary before all of the list will be indicted on both counts. The important differences between these antigens are:

1. The A and B groups are practically always associated with natural agglutinating antibodies occurring in the serum while the other types have no natural antibody counterparts.
2. The A, B and, to a lesser degree, the Rh red blood cell substances are much more likely to cause sensitization and reactions when transfused into patients with other blood groups and types. Only rarely are these reactions due to other blood types.
3. Sensitivities to red blood cell factors developed in the pregnant woman are in 92 per cent of the cases due to the Rh types, while the majority of the remainder are due to A, B and Hr factors.
4. Sensitization to the A and/or B groups is easily recognized by the old and simple agglutination test, while sensitivity to the Rh and Hr types does not always show up by this method but must be demonstrated by two equally simple new methods,[4] the conglutination and blocking tests or their equivalents[2].

Application to Females

The two methods of sensitization of females include medical injections of blood products and pregnancy. Small girls can be sensitized to the Rh factor by as little as 30 c.c. of whole blood injected intramuscularly for measles prophylaxis. This may result in their never being able to have a live child of their own, or they may die from an improperly tested blood transfusion later in life. This type of sensitization in females demands the immediate recognition by all physicians as a real hazard to their patients' future welfare. This danger may even include the injection of serum of other animals which contains A and B substances. Sensitizations of women carrying a fetus of a different blood group or type are mostly due to the Rh types and rarely due to A, B, and Hr. The evidence of the sensitization of a pregnant woman to the red blood cell factors is generally recognized clinically in the form of a stormy pregnancy, stillbirths, the birth of an infant with erythroblastosis fetalis, or a transfusion reaction. Theoretically rare, abortions may be related to incompatible red blood cell elements. The rules for laboratory recognition of sensitization includes:

1. All pregnant women should be Rh typed. The 15 per cent which are Rh negative should receive special attention.
2. At present all three laboratory procedures, agglutination, conglutination, and blocking tests or their modified equivalents, should be run routinely on suspected patients for the detection of sensitization.
3. This laboratory evidence of sensitization may rapidly disappear from the blood following pregnancy and is frequently gone two months postpartum, yet the patient remains sensitized.
4. Intrauterine sensitization can nearly always be detected by one or more of the three laboratory tests mentioned.
5. The occurrence of positive tests during pregnancy may be the result of a previous pregnancy and the present fetus may not develop erythroblastosis fetalis.
6. Increasing titers of the three tests during a given pregnancy must be interpreted with caution. Some authorities[1] feel that this phenomenon indicates the existence of erythroblastosis fetalis and that a rising agglutinating titer to Rh factor is an indication for premature delivery of the infant to save it from erythroblastosis fetalis.
7. The occurrence of a positive blocking test during pregnancy tends to have a bad prognostic significance for the infant.
8. The titers of the three blood tests are likely to be highest one or two weeks after delivery.
9. The ordinary agglutination and cross match tests are frequently negative in the common (92 per cent) Rh type sensitization.
10. The conglutination and cross matching tests with red blood cells suspended in serum instead of saline are absolutely essential before there are blood transfusions in Rh negative women who have given birth to full term infants.

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11. In cases of doubt, Wiener's biologic test for transfusion compatibility can be used. Here 50 c.c. of blood is given and, if at the end of half an hour there is no rise in temperature or increase in the icterus index of the patient's serum, any amount of the blood may then be given.

Future practical advances in our knowledge of blood types are likely to be productive in the field of prophylaxis or therapy of blood type sensitization. At present, Wiener[5] has demonstrated the efficacy of using strong antigens such as typhoid and pertussis vaccines repeatedly throughout pregnancy to prevent the development of erythroblastosis fetalis. The test appears to be useless in a patient who already has demonstrable antibodies in her serum but may be efficacious in others. Once an Rh negative woman has given birth to two or more infants with fatal congenital hemolytic disease and it is demonstrated that her Rh positive husband cannot give rise to an Rh negative infant (homozygous), then the dangers of additional pregnancies should be weighed against the unlikely chances for a viable infant. The advantages of contraception, sterilization, abortion, and/or sexual abstinence should be made clear. Of course, all sensitized women should be warned of the dangers of improper blood transfusions.

Application to Infants

Erythroblastosis fetalis has been classified on the basis of its clinical manifestations in four forms: hemolytic anemia of newborn, icterus gravis neonatorum, hydrops fetalis, and the most recently described icterus neonatorum precox. The disease is generally clinically recognized through (1) the appearance of jaundice at the time of birth or within the first forty-eight hours (later it is confused with icterus neonatorum), (2) unusual pigmentation of the vernix caseosa, amnionic fluid, and placental membranes, (3) weakness, (4) pallor, (5) edema of peripheral tissues, (6) stillbirth, and (7) a history of previous erythroblastic infants. The laboratory aids to recognition include (1) anemia, (2) erythroblasts in excess of 10 per hundred white blood cells, (3) the increased icterus index, (4) demonstration of red blood cell factor antibodies (anti-Rh in 90 per cent) in the serum of the mother or infant, and (5) the blood groups and types of the family. The clinical and laboratory manifestations of this disease are so varied that one should be extremely cautious in insisting upon any one or any combination of the various means of recognition of the disease. It is entirely possible that as many as 60 out of 10,000 deliveries have a mild form (icterus neonatorum precox) of this disease. 95 per cent of which are due to A and/or B sensitivity.[3]

The treatment of erythroblastosis fetalis consists primarily of preventing death as the result of anemia. Many infants are undoubtedly saved by the immediate transfusion of Rh negative group 0 blood. An average newborn infant has approximately 250 c.c. of blood so that, if two transfusions of 75 c.c. each can be given within the first twenty-four hours or sooner if indicated, the infant should be fairly safe from this cause of death. Rh negative blood of the same group as the infant or the mother's red blood cells washed twice with saline and resuspended generally in a more concentrated form in saline are excellent. Rh positive blood is the last choice. If the infant's red blood cell count does not fall below 3,000,000, a blood transfusion may not be necessary. Red blood cell counts, twice daily, are indicated for the first ten days. At present there appears to be no way of preventing deaths as the result of brain (kernicterus) or liver destruction or by internal hemorrhages which rarely occur in this disease. Cesarian section two weeks before the expected date of birth has lost favor in the opinion of some and is strongly advocated by others.[1] If Wiener's theory[6] is correct, that certain forms of erythroblastosis fetalis are due to A and B factors and that these factors are milked into the infant's blood stream during labor, then it would seem that cesarian section may prove lifesaving in this small group of cases providing they can be recognized in advance of labor. Since natural antibodies occur in the blood for the A and B factors, it is more difficult to determine whether the mother has been sensitized to them. The titer of her anti-A and/or anti-B agglutinins may be so high as to amount to presumptive evidence of the sensitization. The sensitized mother's antibodies occur in her milk so that breast feeding is absolutely contraindicated.

Application to Males

The blood groups and types are important to the male in three entirely different fields: (1) danger of multiple transfusions, (2) proof of nonparentage, and (3) the demonstration of zygosity. It has been variously calculated that from 5 to 20 per cent of Rh negative males (or females) have been sensitized to the Rh factors by multiple transfusions. Rh typing of all recipients (male and female) of blood transfusions is mandatory to prevent sensitizing the Rh negative individuals to Rh positive blood and preventing serious transfusion reactions in those already sensitized. This sensitivity to the Rh factors may not show up in tests in which the red blood cells are suspended in saline, thus necessitating a routine use of a suspension of the red blood cells of the donor in neutral serum (his own serum will do) and mixing this suspension with the undiluted serum of the recipient.

A wrongly accused man now has a 45 per cent chance[7] of proving nonparentage, a dispute which has been brought to the laboratory frequently since the last war. All of the various blood factors listed above are inherited from the parents. The occurrence of any of the factors in a child which is not found in the mother or the accused man immediately eliminates him as the father. There is no scientific means of proving parentage.

The problem of homozygosity or heterozygosity is very important to the majority of married couples who have had a baby with hemolytic disease of the newborn. It is well established now that if the husband is heterozygos and can give rise to Rh negative children, then 50 per cent of the offspring of the couple who have had a previous erythroblastic infant can be expected to be free from the disease. Additional pregnancies may then be advised. Whereas, if the man is homozygos, all of his offspring will be Rh positive and once his sensitized Rh negative wife has delivered two or more infants with fatal erythroblastosis fetalis, the chances of a viable offspring of this mating is unlikely. The heterozygos trait can be recognized by finding an Rh negative child among the living children of this couple or an Rh negative parent of the man. An Hr typing of the man, using difficult-to-obtain anti-Hr serum, may in itself virtually prove the homo- or heterozygosity of the man.

Summary

This has been an attempt to summarize briefly the more important clinical applications of the present-day knowledge of blood groups and types. The discussion has been arranged according to its separate relationship to females, infants, and males. The knowledge of blood groups and types has progressed to the point where clinical and laboratory procedures can solve most of the diagnostic problems which arise in connection with complications due to blood factors in blood transfusions and pregnancies. Future important progress is to be looked for in the field of therapy of these conditions.

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SUPERIOR PULMONARY SULCUS TUMOR
(Pancoast Tumor)

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Clinical History: E. H., male, aged thirty-eight years, a lithographer by trade, was admitted to the hospital on January 9, 1945, complaining of pain in the right arm up to the elbow joint and in the right shoulder.

In May, 1944, he felt a "kink" in the small of his back as he was getting out of his automobile. As the pain persisted, he consulted a physician who treated him for arthritis. Having obtained no relief after two months of treatment, he consulted an osteopath who gave him treatments for misplaced ribs. After about three weeks, the pain became worse. He returned to the physician, who then gave him three intramuscular injections, probably of novocaine. This gave him permanent relief from his back pain. In October, 1944, he developed pain in his right shoulder. In three weeks, this pain had extended down in the right arm and remained there up to the time of admission (January 9, 1945). He had tried heat treatment and received bee venom injections without relief of the pain. The pain was so severe that it would wake him up frequently at night. At times, he had a burning and tingling sensation. It went down the forearm on the posterior part and involved the hand and the last three fingers. It was found that his grip in his right hand was weak, and he could not manipulate objects very well. He had no pain in any of the other extremities.

His past health had been fairly good. He had had measles four times; the last time, he developed a cataract in the left eye. He had been blind in this eye ever since. He denied having had venereal diseases. He did not drink. He smoked about fifteen cigarets a day. He had had no operations or accidents. He had lost about 20 pounds since the present illness began. His appetite was fairly good.

On physical examination, the patient was found to be fairly well developed and fairly well nourished. He had a blind left eye with a visible cataract. A visible mass was noted and palpated in the right supraclavicular space. The blood pressure was 162/92. The heart was normal. The lungs, on admission, were clear to percussion. The Murphy percussion over the back elicted pain over the right shoulder. The abdomen was negative. The triceps reflex was absent and the biceps was exaggerated, in the right arm. His right hand exhibited atrophy of the first dorsal interosseous muscle. The fingers of the right hand appeared glossy and tapering. There was tenderness over the right brachial plexes (Fig. 1).

The hemoglobin was 89 per cent. The red blood count was 4,090,000 per cubic millimeter. The white blood count was 15,000 per cubic millimeter. The urine showed albumin one plus, otherwise was negative. The spinal fluid showed a pressure of 6 millimeters and, on jugular pressure, it rose to 9 millimeters. The cell count was 30 per cubic millimeter. The total protein was 62 milligrams per cent. The colloidal gold curve was 33221000. The Kolmer Wassermann was four plus positive. The patient received a course of deep radiation therapy over the right neck and shoulder and was discharged on January 25, 1945. He was subsequently admitted to the Ancker Hospital and later to the Cancer Hospital.

Dr. Harold O. Peterson: A roentgenogram was taken primarily to demonstrate the right shoulder and clavicle. These bones were normal. However, there was a destructive lesion involving the posterior ends of the first and second ribs, and some destruction of the inferior border of the transverse process of the first thoracic vertebra, all on the right side. There was a soft tissue shadow which came down into the lung like a cap sitting over the apex, a dense area, which together

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Presented at the medical staff meeting of the Charles T. Miller Hospital, Saint Paul, Minnesota, May 7, 1946.

From the pathological laboratory of the Charles T. Miller Hospital, Kano Ikeda, M.D., Pathologist.

with the bone destruction and soft tissue shadow, was a very characteristic x-ray sign for the so-called Pancoast tumor. Pancoast was a radiologist and, for that reason, most roentgenologists are familiar with this condition, although it is not very common. He called it a superior pulmonary sulcus tumor and felt that he was describing a new entity. I believe most people consider that it is a primary carcinoma of the lung. However, it differs from the usual form of primary carcinoma of the lung in that it actually extends through the chest wall and destroys ribs and extends up and infiltrates into the soft tissues of the neck. It can be diagnosed by having a shoulder film, in which the film is placed crossways to include the spine. Such a film will show the apex of the lung as well as the shoulder. With that film or a chest film, a diagnosis can be made, although the shoulder film tends to demonstrate the bones a little better; but on the routine chest film, the dense mass may be seen filling the apex of the lung and producing rib destruction. We have another film taken about six months later (Fig. 2). The destruction has extended. It has gone around the ribs, and the first and second ribs are destroyed for a considerable distance. It has extended into the vertebra and completely destroyed the pedicle of the second thoracic vertebra, and is gouging into the bodies of the vertebra above and below.

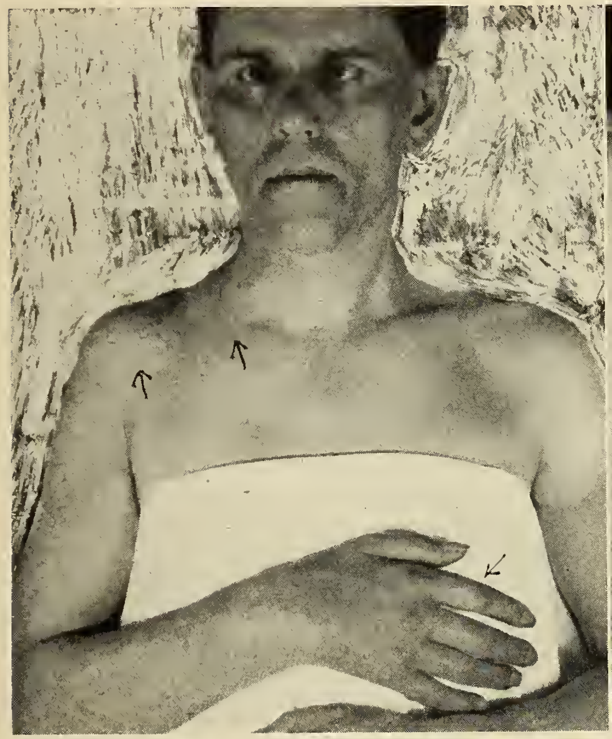


Fig. 1. Note fullness of the right neck due to tumor infiltration and atrophy of the right shoulder.

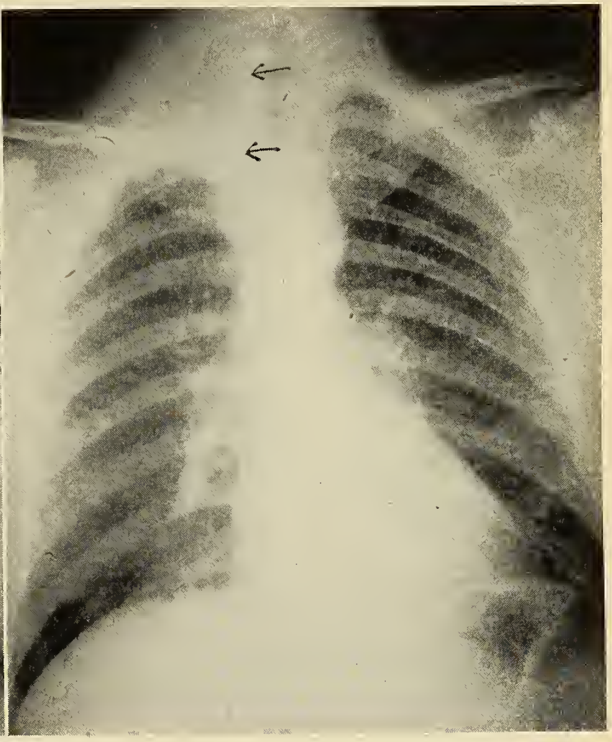


Fig. 2. Mass occupies the right apex, with destruction of the first and second ribs posteriorly and transverse processes of the corresponding spine on the right side.

Dr. Kano Ikeda: Autopsy was done after embalming. It was difficult to do a good job of exploring the neck, the spine, or the back of the body. It was difficult to remove the tumor entirely because it infiltrated out of the thoracic cage into the neck, deeply and widely. The fixation of the tissues of the neck by the embalming fluid made it impossible to do a satisfactory dissection through the limited space and approach, that is, through the upper opening of the thoracic cage. Aside from the tumor at the superior pulmonary sulcus, the important findings were: (1) a hypertension heart weighing 520 grams, and (2) a distended urinary bladder (cord bladder) due probably to the infiltration of the tumor into the spinal cord which was not examined.

The apex of the right lung was capped by the tumor which infiltrated into the parenchyma in streaks for a short distance and into the medial and posterior aspects of the apex (Fig. 3). Here it was transformed into a white, hard, fibrous tumor mass which was almost hyalinized and obliterated the parietal pleura. The tumor infiltrated into the intercostal muscles and the muscles of the neck and their tendons, and enveloped the nerve trunks and the blood vessels of the neck on the right side, incorporating them into an ill-defined, solid mass, the extent of which could not be determined. The posterior portions of the first and second ribs and the bodies of the lower cervical and upper thoracic vertebrae were destroyed by the tumor as was evidenced by the dissecting knife. The tumor infiltrated into the pulmonary parenchyma for a short distance near the apex. No definite primary site of the tumor, such as is usually seen in a bronchogenic carcinoma, was demonstrated. The lungs, otherwise, showed a chronic bronchitis, bronchiectasis, and intervening areas of pneumonitis.

Microscopically, the tumor consisted of solidly packed "epithelial" cells, in some areas uniform in size and shape, with medium-sized hyperchromic vesicular nuclei, in an alveolar arrangement, and in other areas irregular in size and shape, with abundant eosinophilic cytoplasm and large nuclei, often lobulated, rich in chromatin and decidedly pleomorphic, often accompanied by abundant intercellular collagenous connective tissue. The tumor appeared to be generally quite cellular, but there were areas of increased collagen production and fibrosis, where only isolated tumor cells were seen to infiltrate. It infiltrated into the fat, muscles, and bone. The parenchyma of the apical portion of the lung was completely displaced by the tumor which could have invaded the lung from without. At the invading border of the tumor, there were varying degrees of interstitial fibrosis and septal thickening, along with infiltration of tumor cells which might form alveolar linings, sometimes in clumps or in papillary projections. Cornification was not present. Pleomorphism was most conspicuous. The general microscopic appearance of the tumor was that of an anaplastic adenocarcinoma. While the nerve trunks and the muscle bundles were not actually invaded by the tumor, they showed changes due to the pressure of the growth such as edema, atrophy, fibrous replacement, and fatty infiltration (Figs. 4 and 5).

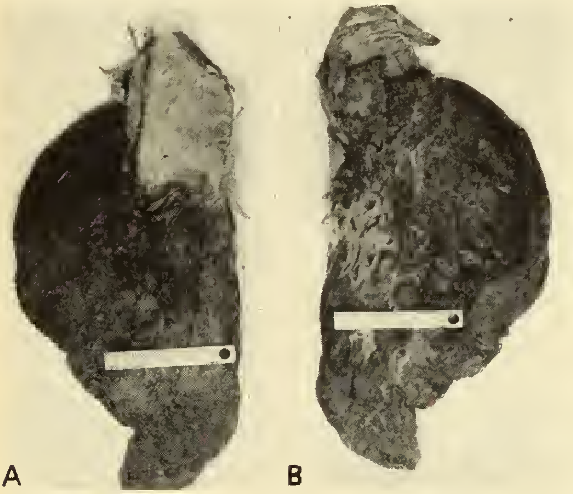
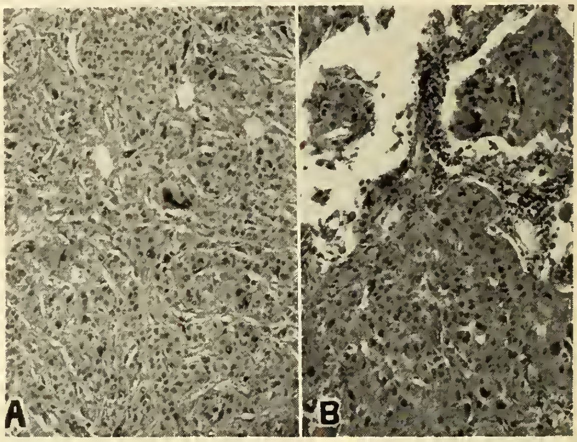


Fig. 3. Hard tumor mass at the apical cap. (A) The pleura on the posterior aspect of the apex is transformed into solid tumor mass which is contiguous with the mass in the neck. (B) The tumor "infiltrates" into the pulmonary parenchyma for a short distance at the apex.

Dr. Gordon R. Kamman: Neurologists see many patients suffering from pain in one of the upper extremities, but many of these cases are not neurological in origin.. Some patients have arthritis or fibromyosis of the shoulder joint with pain radiating down the arm. Just recently, I saw a woman who was sent in with a diagnosis of radial neuritis, but upon examination she had definite limitation of motion of the shoulder joint and the characteristic x-ray findings of arthritis. In arthritis affecting either shoulder or the hip joint, there may be muscular atrophy of the extremity with reflex changes. In this case there was a reduction of the triceps reflex with an exaggeration of the biceps. This was not due to an irritative lesion involving the nerves supplying the biceps, but it was due to a weakness of the triceps muscle which permitted an excessive reaction of the biceps when the tendon was tapped. Another condition which enters into the differential diagnosis of pain in the upper extremity is brachial neuritis. I think that this is due to virus infection and it seems to have been more common during the past few years. This condition is accompanied by pain radiating down the arm, usually the radial aspect, and involving the thumb and the first two fingers. The biceps tendon jerk is frequently reduced. In this case the biceps jerk was exaggerated.



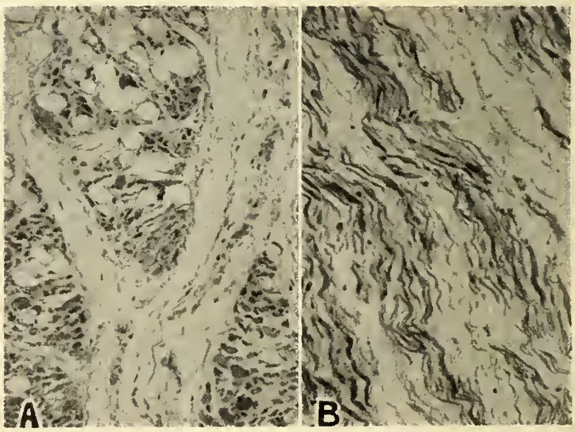


Fig. 4 *(above)*. Solid adenocarcinoma in alveolar arrangement. Note a marked pleomorphism of tumor cells. (A) From the solid mass in the neck. (B) Infiltration into the pulmonary parenchyma.

Fig. 5 *(below)*. (A) Atrophy and fatty infiltration of the muscle of the neck. (B) Edema and atrophy of the brachial nerve.

The patient who has just been presented was sent in with a diagnosis of hysteria. The diagnosis of hysteria was made because the patient failed to respond to the various forms of treatment which his attending physician had used, such as injections of local anesthetic, heat treatments, encouraging talks, et cetera. The doctor finally concluded that because the man was not getting any better he was a fool and that he had better come in to see me.

The neurological examination in this case was essentially negative except for the findings referable to the right eye and the right upper extremity. The left eye was blind as a result of an old cataract. The right eye showed a typical Horner's syndrome, i.e., contracted pupil, recession of the eyeball, enophthalmos and ptosis of the upper lid. This syndrome is due to an interference with the cervical sympathetics. There was a mass in the right supraclavicular space. The mass was not tender, but upon pressure upon it the patient would complain of pain radiating down the distribution of the radial nerve. This is called a Tinel sign and indicates involvement of a nerve trunk. The patient also had trophic changes in the right arm, i.e., the swelling, tapering fingers, and a glossy appearance of the skin. There also was weakness of the right grip. Pain was very severe and required the administration of narcotics. This is quite important from a diagnositic standpoint, because a pain which requires as much narcotic as this man required and also which awakens a patient at night is almost invariably on an organic basis. Functional pains do not awaken people. In obtaining a history as to whether or not a pain awakens a patient from sleep, it is very important to ascertain whether the patient wakes up and then begins to have pain, or whether the pain actually wakens the person like any other stimulus could. This man had many, many sleepless hours. He spent hours sitting up in a chair or pacing the floor. We had him in the hospital just long enough to make a diagnosis and to give him some deep x-ray therapy, which rarely does any good. The only reason that x-ray is ever used in these cases is that it sometimes reduces the amount of pain the patient has, and I believe that this happened to a slight degree in this case. For some reason or other, the tumor is not surgically removable.

We considered doing a high cervical cordotomy in order to avoid the morphine addiction, but the man's expectancy was only a few months, so we felt that it would be just as well to keep him on morphine and avoid an operation.

Doctor Ikeda has pointed out that the lesion extended into the spinal canal. This patient apparently had a cord bladder, and if we had had a chance to make a neurological examination just before the patient's death, we probably would have found signs of a high transverse cord lesion. (I did not see the patient for several months before he died.)

There is no question about diagnosis in this case. The lesion was first described by Pancoast in 1932.[8] Pancoast's description presents clinical and roentgenographic characteristics which would warrant the naming of this lesion as a pathologic entity. The symptoms in all cases are very similar to each other and could be confused with arthritis of the shoulder joint. X-ray studies show a comparatively small and circumscribed shadow in the apex of the lung which is due to lung displacement rather than to infiltration of the lung. There also is destruction of the posterior portion of one or more ribs and of the adjacent articular and transverse processes of the vertebrae. There is a striking lack of intrathoracic metastases. Because of the comparative rarity of the tumor, those who are not entirely familiar with it are apt to confuse it with other conditions which present only portions of the diagnostic complex. On the other hand, the condition is often overlooked because of incomplete roentgenological studies, especially in examining only the shoulder. Doctor Peterson says that he likes to have all of his shoulder films include structures up to the midline because in that way he can discover superior sulcus tumors which otherwise would be missed if the pictures were confined just to the bony structures of the shoulder joint. Pancoast has made it a routine to examine fluoroscopically the neck and chest of every patient who comes in for an examination of his shoulder because of pain. I think that this is a very good rule to follow. Primary lung tumors of the upper lobe, tuberculosis, mediastinal tumors, and a few other lesions produce apical shadows which are frequently ascribed to superior pulmonary sulcus (Pancoast) tumors. However, the clinical picture in these other conditions is different, because in them Horner's syndrome appears as a late manifestation. This is because the lesion begins at a distance from the structures which must necessarily be involved in order to produce a Horner's syndrome. Furthermore, the apical shadow in the other conditions is far more extensive than in superior sulcus tumors, and bony involvement appears very late. Pancoast believed that the tumor was an epithelial type of cancer and he pointed out that if the growth were endothelioma of the pleura, it would not be likely to invade the bone and spare the soft tissues. The strange thing about this tumor is that the soft tissue of the lung underlying the tumor is spared, and there is displacement rather than infiltration of the lung. Yet, the tumor will erode through the hard structures, i.e., the ribs and the cervical vertebrae. This is rather paradoxical but it happens in all of the cases. The prognosis is always bad, radiation never helps, the tumor is not surgically removable, and death usually ensues in from a few to fourteen months.

Fried,[3] in 1935 in the *American Journal of Cancer,* expressed some doubt about Pancoast's idea of this being a primary tumor arising from remnants of the branchial cleft. He described a case which he thought presented symptoms of the Pancoast tumor but which upon post-mortem examination, was discovered to be an intrapulmonary carcinoma. However, in his case Horner's syndrome appeared *late,* while in Pancoast tumors the Horner's syndrome invariably appears as an early manifestation. Furthermore, in Fried's case, roentgenological studies showed extension into the lungs while in Pancoast's cases there is no extension into the lungs, but, rather, an erosion of the bones. This latter point is very important in the differential diagnosis between Pancoast tumor and intrapulmonary carcinoma.

In 1936 Steinberg[5] reported a case, and I am going to give the symptoms of his case because they so closely resemble those in our case. Steinberg's patient was a male, aged forty-seven. The duration of the illness before examination was six months. The presenting symptoms were pain in the right arm of six months' duration and a lump in the right supraclavicular fossa. At first the pain was intermittent but then it became constant, radiated down the arm from the shoulder to the fingers, and was burning and knife-like in character, making sleep impossible. It was necessary to employ large amounts of sedatives, and later narcotics. The lump in the right supraclavicular area gradually increased in size and there was a progressive loss of weight and generalized weakness. There were practically no respiratory symptoms. The right upper extremity showed marked atrophy of the intrinsic hand muscles with weakness of the grip. There were no sensory changes. Roentgenograms of the chest and upper cervical region disclosed a mass at the cupola of the right lung adjacent to the vertebral column, and destruction of the first and second ribs near the transverse processes. The mass appeared to extend downward to the level of the first interspace. Biopsy showed an epithelial neoplasm having malignant features. A diagnosis of superior sulcus tumor or Pancoast tumor was made and radiation therapy was given over a period of eighteen days without relief. The soft tissues of the right upper extremity continued to atrophy and the wasting was particularly marked at the deltoid, biceps, and interosseous muscles of the hand. At autopsy, the right apex of the lung was found to be adherent to the tumor mass in the region of the superior pulmonary sulcus. The tumor involved the head and neck of the first two ribs and it also eroded the transverse process of the seventh cervical and the first and second dorsal vertebrae. Palpation of the vertebral bodies showed them to be roughened and involved by the tumor. The substance of the tumor mass was extremely firm, slightly rubbery, and generally yellowish-white, and it cut with considerable resistance. In the apex of the right lung there was a flattened, smooth, yellowish plaque similar in appearance to the tumor tissue, which on section, was found to be confined to the pleura and not to extend into the parenchyma of the lung. Sections of the nerve trunks showed infiltration of perineural lymphatics by tumor cells. The final pathologic diagnosis was carcinoma of the right pulmonary sulcus (Pancoast tumor of unknown origin), with extension into the first and second ribs and transverse processes of the body and the bodies of the seventh cervical, first and second thoracic vertebra, and metastases to the pleura and right kidney, lobular pneumonia, bilateral patchy emphysema, and atelectasis. The kidneys showed mild arteriosclerosis and tumor metastases and degeneration. The histologic picture of the tumor in this case was very similar to ours. While some sections revealed a disorderly, highly bizarre, cellular pattern, many sections showed a glandular pattern. The weight of evidence was against an intrapulmonary origin.

Dr. Kano Ikeda: Clinically and roentgenologically, Pancoast tumor appears to be a distinct entity. With the clinical manifestations and the characteristic roentgen findings, the disease offers little difficulty in diagnosis. An alert roentgenologist should, as in our case, make the diagnosis without the clinical history. Likewise, a clinician may arrive at the diagnosis on the symptoms alone. Pancoast himself reported his origial cases, all of them without necropsy, three with biopsy and two with a history of having been treated for a cancer of the cervix uteri, on the roentgen findings and clinical symptoms. However, an early diagnosis, that is, the recognition of the condition before the appearance of the classical signs and manifestations, may be difficult. Pathologically, the location of the tumor, its gross appearance, and its invasive characteristics are fairly pathognomonic. Microscopically, however, there has been no uniformity in its histologic pattern, which cannot be attributed to metaplasia. While the tumor is conceded to be malignant in all cases thus far reported, and in a large majority it is diagnosed as carcinoma, there is a valid objection to making it a pathologic entity, since its histogenesis is yet unknown and the varied cell patterns suggest more than one type of primaries. Cases have been reported as Pancoast tumor on the basis of clinical and roentgenological criteria without the complete necropsy. Other cases have shown the tumor to be a metastatic mass with a primary elsewhere demonstrated at necropsy.[1] Still others revealed the tumor to be a bronchogenic carcinoma.[3,7] One case was reported as sympathoblastoma which, without the differential stain, might have been diagnosed as an anaplastic carcinoma.[4] Another was reported as pleural endothelioma.[6] Our case seems to belong to a type of adenocarcinoma of the bronchogenic origin. I would therefore hesitate to accept Pancoast tumor as a pathologic entity. It describes a clinical syndrome and may be considered merely as a clinical entity. Any malignant tumor, primary or metastatic, located in the region of the superior pulmonary sulcus, accompanied by the signs and symptoms described by Pancoast may be designated as Pancoast tumor.[2]

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from October Issue)

J. Herbert Darey, one of a family of three children, was born on December 19, 1861, at Montreal, Quebec, Canada. His father, Pierre S. Jacques, a native of Paris, France, was for thirty-five years a professor on the faculty of McGill University, in Montreal. His mother was born Mary Juliet Anable, in Philadelphia, the daughter of American parents; she was educated in a private school for girls and later became an artist.

An able student, when Herbert Darey was graduated from the Montreal High School, in 1876, he received the Dufferin Bronze Medal, presented by His Excellency, the Governor General. His scholastic career continued to be brilliant, as is evidenced by the following tribute from Alexander Johnson, M.A., LL.D., (Dublin), the Vice Principal of McGill University and Dean of the Faculty of Arts:

> I have much pleasure in stating that Dr. J. Herbert Darey, B.A. (1880), M.A. (1885), M.D. (1885), during his undergraduate course in Arts was one of the most distinguished students the University has ever had. He obtained First Rank Honors and the Gold Medal in Classics at the end of the third year; Classical Scholarship at the beginning of the third year; First Rank General Standing in all subjects during the first three years; Exhibition in the first two years.
>
> At the examinations in the ordinary subjects throughout his course, he obtained first class on every occasion but one—a very rare distinction, indeed.

In order to avail himself of the Alexander Scholarship, at Cambridge University, England (received at the beginning of the third year), the young man went to Europe before his graduation from McGill University; on his return to Montreal and after his graduation from the university, in 1885, he became a member of the faculty.

In 1886 Dr. Darey served as resident physician at the German Hospital in Philadelphia. Two years later, when he had gone on a visit to relatives in the Middle West, in Iowa and especially in the immediate vicinity of Granger, in Fillmore County, Minnesota, unforeseen circumstances determined his future residence.

Dr. Don J. Lathrop, who since 1872 had been the only practicing physician in Granger and who since July 4, 1882, had been almost completely blind as the result of an accidental explosion of gunpowder, died on May 2, 1888, and it happened that Dr. Darey arrived in the village on the day of the funeral. Soon recognizing the opportunity available locally for a young physician and liking the country and the people, Dr. Darey decided to settle there and he shortly entered upon an interesting ten years of his life and work.

Pioneer citizens of Granger recall many incidents of the young doctor's skill.

One resident has told of an occasion when she opened her home for the performance of a surgical operation on one of her relatives, a little girl who was suffering from a serious infection of the knee. Physicians had been called from a distance and after consultation they had decided on amputation of the affected limb. While the instruments were being prepared in an improvised sterilizer on the kitchen range, a member of the patient's family besought young Dr. Darey, who had been asked to be present, for his candid opinion. Dr. Darey examined the knee and then replied: "You would like to save the child's leg if it were at all possible, wouldn't you?" The family had no other wish and gave him permission to use any measures he thought advisable in order to obviate amputation. As it is recalled, Dr. Darey made a small incision over the patella and removed some blood clots from underneath that bone; the little girl in a short time made a perfect recovery.

Dr. Darey was licensed in 1887 to practice in Iowa, and on April 6, 1888, he received his Minnesota state certificate No. 18 B, under the Medical Practice Act of 1887. Very fair, boyish in appearance, in order to appear older than his scant twenty-five years he let his full beard grow.

About two years after he began his practice in Granger, Dr. Darey was married, on June 11, 1890, to Elizabeth Horton, a teacher of music, of English descent. Mrs. Darey came of a family interested in medicine; she had a brother who was a physician, and in later years one of her nephews became a qualified practitioner.

From his earliest professional years Dr. Darey was identified with medical societies. He was at one time president of the Woodbury County (Iowa) Medical Society; he was a member of the Southern Minnesota Medical Association, which was organized in 1892; the Houston-Fillmore County Medical Society; and the American Medical Association. At the thirty-first annual meeting of the American Public Health Association, held at Havana, Cuba, in 1905, he was elected to membership in the organization. A non-professional organization of special interest to him was the Sons of the American Revolution, to which he was admitted in 1920, as the great grandson of Asa Sheldon and Isabel Lowe Sheldon and the great great grandson of Samuel Lowe and Alma Stafford Lowe. He was a member of the Episcopal Church and was a Mason, having joined the Blue Lodge of Preston on December 18, 1889; he withdrew from membership in 1896.

An able physician and surgeon, he was in general practice during his years in Fillmore County, but after his removal to Sioux City, Iowa, in 1897, he limited his practice to the field of internal medicine.

Dr. J. Herbert Darey died in Sioux City on March 10, 1929, in his sixty-eighth year, from abscess of the spinal cord. He was survived by his wife (there were no children) and his sister, Mrs. H. A. Matheson, both of whom were living in 1943, Mrs. Darey in Sioux City and Mrs. Matheson in Ottawa, Canada. His brother, Laurence A. Darey, a civil engineer of Sherbrooke, Province of Quebec, died previous to 1929.

William Henry Dean, born in 1833, came to Spring Valley probably in 1857, shortly after his graduation from the Medical School of the University of Michigan at Ann Arbor. From the scanty record available, he gave evidence both of ability as a physician and of courage as a citizen.

In that period a well-organized band of thieves was plundering stores and farm homes and stealing horses in a widespread region. Legal redress was not feasible and action was necessary, so that finally the injured citizens met as a group in the village of Hamilton to organize and to adopt rules and solemn pledges that they would act under established laws if possible but that in any case they would get rid of the thieves. When the moment came to sign the articles of agreement, there was hesitation among the men until Dr. Dean took the pen and signed his name first. Eventually, after it was discovered that the gang included local farmers, ostensibly honest, and a conniving justice, and after many scrimmages, the robbers were dispersed.

Dr. Dean's tragic death in the autumn of 1858 was the result of an accident that occurred late one afternoon when he and a party of his friends were being weighed on the platform scales in Stevens' mill in Spring Valley. A revolving shaft, unobserved in the dusk, caught Dr. Dean by the shawl which he wore secured about his shoulders in the manner of the time and carrying him from the platform dashed him against the scales at each revolution until the machinery could be stopped. Dr. H. Gilbert of Spring Valley gave him professional care and called in Dr. I. S. Cole and Dr. R. W. Twitchell of Chatfield, but Dr. Dean had been injured so desperately that he died eleven days later, on October 18, 1858. He was twenty-five years of age.

John R. De Cousens was in Lanesboro for at least a few years, probably beginning in 1881. He was then a man in his late fifties. It seems likely that he came to Lanesboro from Dundas, in Rice County, for in 1880 a Dr. John R. D. Cousens was mentioned by the State Board of Health as having given a report on diphtheria in Rice County for the year from November 1, 1879, to November 1, 1880.

On December 31, 1883, in Lanesboro, Dr. De Cousens received exemption certificate No. 714-3, under the Act of 1883 to regulate medical practice, and he was still in the village in 1885 and 1886, serving as local health officer. Judging from the reports which he submitted to the State Board of Health, he was a thorough and conscientious physician and inspector.

With official record of his professional capability and responsibility there remains hearsay evidence of one occasion on which a colleague differed with him as to treatment of a minor surgical condition. It has been told that a citizen of Lanesboro whose palm had been ripped open by the needle of a binder went to Dr. De Cousens for treatment. The doctor, using a needle larger than a darning needle of average size, as a brother of the injured man has remembered it, threaded with wire, sewed up the wound and dismissed the patient telling him not to leave the dressing on later than the following morning. The patient, feeling dubious about the procedure as well as being extremely uncomfortable, went in the morning to Dr. Johan C. Hvoslef, of Lanesboro, who saw fit to remove the wire and renew the dressing.

Other information as to Dr. De Cousen's career has not been available; in the official register of physicians of the state, of 1883-1909, he is listed, without date, as deceased.

Paul G. Denninger, a homeopathic physician, was in various localities in southern Minnesota between 1870 and 1890, and for four or five years of the time (1876-1880) was in Spring Valley, Fillmore County.

Born on January 20, 1848, in Berlin, Germany, Paul Denninger in 1862 came with his parents to the United States and in 1870, then a medical practitioner, settled in Eyota, Olmsted County, Minnesota. In Eyota on June 12, 1871, he was married to Susie A. Wagner, daughter of a local family. At the beginning of 1876 Dr. Denninger removed to Spring Valley, to enter practice with his brother-in-law, Dr. C. H. Wagner of that village.

Dr. Denninger joined the Southern Minnesota Homeopathic Medical Society in October, 1871, but it was not until 1879 that he received the degree of doctor of medicine from the Hahnemann Medical College and Hospital of Chicago. At that time there appeared renewed announcements of his opening offices in Spring Valley; by 1881 he was in Faribault, Rice County, where he remained for a considerable number of years. On April 22, 1884, he received his license, No. 884 (H), under the "Diploma Law" of the preceding year, to practice in Minnesota, and in this period he became a member of the Minnesota State Homeopathic Institute. Moving to California in 1890, he practiced there for many years, living in different towns, among them Monterey, Pacific Grove, San Jacinto and San Jose; he died in San Jose on December 10, 1927.

John C. Dickson was born in Springfield, Illinois, on December 26, 1837. His early education and his preliminary medical training, the latter beginning in 1865, he obtained in Springfield. From October 1, 1866, through 1868 he studied chemistry and practical pharmacy and attended lectures on medicine at the University of Michigan, in Ann Arbor; early in 1869 he took a partial course at the College of Medicine in Louisville, Kentucky, and in that spring came to Chatfield, Minnesota, not to practice medicine, however, but to engage in the mercantile business. It was nearly two years later, then resident in Jasper County, Iowa, that he first used his professional knowledge. In 1873 he returned to Chatfield, to spend the remaining twenty-five years of his life as a practicing physician and surgeon. For a time after his return he was in partnership with William Briley in a drugstore. Subsequently he had his office in a front room over the post office. After 1883 he practiced under an exemption certificate. A contemporary of some of the earliest physicians of Chatfield, among them A. H. Trow and M. A. Trow, father and son, and R. W. Twitchell, he was a colleague also of many of the men who came later, some of whom were E. H. Grannis, I. W. Timmons, J. C. Fate, O. A. Case, A. M. Stephens, F. J. Halloran and C. M. Cooper.

Dr. Dickson is remembered in Chatfield as an honored civic leader who was identified with all movements for the good of the community and as an able and successful physician who inspired confidence in his patients. He often served as county physician, was four times mayor of Chatfield, and was an examining surgeon of the board of pensions of the Chatfield district. Almost throughout the eighties he served as a member of the local board of health and health officer of Chatfield and, in 1885, he represented the village at a conference of state and local boards of health and also at a popular sanitary council for southeastern Minnesota. His interest in public health was evidenced further by the fact that during his years as mayor the Chatfield city water system was begun. A significant item in the *Chatfield Democrat* of September 13, 1894, ran as follows: "Dr. Dickson spends $103 for water on his premises, house, garden, barn and beautiful underground drainage." In the same issue it was stated editorially that Dr. Dickson (who was a strong Democrat) was to run for representative on the Democratic ticket, that he was well qualified that his only fault was that he "trained with the wrong party."

The picture of Dr. Dickson as seen in the descriptions given of him by those who knew him best in Chatfield is that of a tall, well-proportioned, distinguished-looking man; he wore his hair, iron gray in his later years, rather long, and he had a handle-bar mustache which he twisted when he was preoccupied. He drove beautiful horses, was free from addictions, unless the quiet enjoyment of a good cigar is an addiction, enjoyed his home, and was an active member of the Independent Order of Odd Fellows, in which he served for many years as Noble Grand. Well disposed as the doctor was toward his fellow citizens, and respected by all and loved by many, an old friend has described him as "rather reserved, not unfrienlly, but fearless and more inclined to make strong enemies than strong friends."

In the first period of his life in Chatfield (1869-1871) John C. Dickson was married on October 6, 1869, to Ida M. Johnson, who was born on July 15, 1850, daughter of Mr. and Mrs. Peter Johnson, who were early settlers in the community. Of the three children of Dr. and Mrs. Dickson, one died in infancy; Fanny Iowa Dickson was born on December 18, 1872, and died at the age of fifteen years; Marcia Maude was born on July 15, 1874.

Dr. John C. Dickson died in Chatfield on August 29, 1898, from heart disease, at the home of his daughter, Marcia Maude, the wife of John A. Ross, a druggist. In later years Mrs. Dickson made her home in Ventura, California, with Mrs. Ross, and it was there that her death occurred on September 16, 1931. Mrs. Ross died on April 28, 1936, in Ventura, survived by three daughters, all residents of the city; at the time these notes were compiled, early in 1944, two of the daughters, Marcia Ross Thayer and Marguerite Ross Dawley, were living; Evelyne Ross Tate died on June 11, 1943.

M. Donnelly (sometimes seen Downelly), of Lanesboro, the son of pioneer citizens of Fillmore County, was an early physician in the region and one of the first members of the Fillmore County Medical Society. This group, as noted, has been said to have been organized in the autumn of 1862, but a detailed account in a newspaper of Preston would appear to establish the organizational meeting as held on October 17, 1866. Dr. Donnelly, in 1869, was its secretary and also was a delegate to the meeting of the Minnesota State Medical Society, newly reorganized, at Owatonna in June of that year. In 1870 his name was presented to the state society by its Committee on Credentials and duly was placed on the roster.

Dr. Donnelly in his professional cards in the county newspapers emphasized that he treated diseases of the eye and fitted glasses by test, adapting spectacles to all kinds of deranged vision. He practiced medicine in Lanesboro and the community until he moved to New York City, probably in 1871, as indicated by the fact that beginning in that year he no longer was listed as a member of the State Medical Society. In April, 1874, Dr. Donnelly, after a visit in Lanesboro, had returned to his "large and lucrative practice in New York;" in the summer of 1887 he again had been visiting his mother and his friends in the vicinity of Lanesboro.

Frederick Arthur Drake was born in Rushford, Fillmore County, Minnesota, on July 8, 1870, the son of Charles Drake, a native of England, and Jane Hargrave Drake, a Canadian. Of his five brothers and sisters, Frank, Robert, Charles R., Alice and Nellie, only Charles R. Drake, M.D., Minneapolis, was living in 1943.

In Rushford Frederick Drake attended grade school and, in 1889, was graduated from high school, valedictorian of his class. After completing an academic course at the state university, he taught school and next sold saddlery and other leather goods until he began the study of medicine. In 1896 he received from the University of Minnesota his degree of doctor of medicine, cum laude; during these years at the university he had served as chaplain of his class. Dr. Drake was licensed (certificate No. 656) in the state on June

9, 1896, and on completion of a year's internship at St. Joseph's Hospital in Saint Paul he began his medical practice in Lanesboro, a location chosen because it offered financial and professional opportunity. More than forty-seven years of ethical practice, during which he has made a reputation throughout a wide region for careful and accurate diagnoses, have proved his choice a wise one.

Although Dr. Drake has remained in Lanesboro, he was associated briefly, in 1898, with Dr. W. H. Lincoln, of Wabasha, Wabasha County, and in 1913 he considered moving to the West; in fact, it was stated in the *Journal-Lancet* that he had sold his practice in Lanesboro to Dr. Gustave C. Hoff, formerly of Zumbrota, Goodhue County, and was going to Spokane, Washington. Between 1920 and 1925 Dr. Rolf Nannestad worked with Dr. Drake as his assistant in Lanesboro, and since 1939 Dr. John E. Westrup has been associated in practice with him. An honored contemporary in Lanesboro from 1897 to 1942 was the late Dr. Andreas Pederson Lommen; other physicians temporarily there in the late nineties were Thomas W. Hunt and Wellington D. Parker.

Throughout his professional career Dr. Drake has been identified actively with medical progress, in his practice and in medical organizations. He long has been a member, and sometimes secretary, of the local county society: first of the original Fillmore County Medical Society and, successively of the Houston-Fillmore, the Olmsted-Houston-Fillmore and the Olmsted-Houston Fillmore-Dodge County Medical Society. In 1905 he and Dr. W. B. Grinnell represented the society (Houston-Fillmore) in the House of Delegates of the State Medical Association; he is a life member of the state society. In his community Dr. Drake has served as county and as township physician, and for more than thirty years as surgeon for the Southern Minnesota Division of the Chicago, Milwaukee and St. Paul Railway Company.

Of Dr. Drake's many contributions related to his profession, one concrete gift of a medical appliance is singled out here for description because of its historical interest. Some years ago there was given to Dr. Drake by one of his local patients a brass and pewter enemator, which then was nearly 150 years old, a rarity among medical apparatus. Since the late eighteenth century, when its purchase price was six guineas, the instrument, of English manufacture, had been the possession of an English family, some of whose members in the middle nineteenth century immigrated to America and came with their household goods to Fillmore County, Minnesota. Appreciating its value, Dr. Drake placed the little machine among his collection of medical appliances until, a few years prior to this writing, he gave it to Dr. M. C. Piper, of Rochester, for safekeeping in the Mayo Foundation Museum of Medicine and Hygiene, where it now is displayed. The cylindrical pewter barrel of the instrument, 8 inches high and 2 inches in diameter, holds approximately a pint. By means of a brass piston the fluid is forced through a slender brass pipe 10 inches long, which is joined to the base of the barrel at a right angle, and thence into the rectal tip, 2½ inches long, which is of pewter and is joined vertically to the pipe, its base just above the junction flaring into a narrow flange of downward slant. With the instrument there stands its well-constructed, well-preserved, velvet-lined mahogany case, which measures some 11 by 3 by 5 inches.

In Lanesboro Dr. Drake has carried a full share of civic responsibility, as mayor, as a member of the villege council and as president of the board of education. He is a Mason (A. F. and A. M., 102, Past Master; the Order of the Scottish Rite and the Osman Shrine); a member of the Modern Woodmen of America and of the Independent Order of Odd Fellows. His chief recreations have been fishing and hunting; his intellectual diversions, outside his profession, are Norwegian whist and, above all, reading and perfecting his excellent library of more than 2,000 volumes which is said to be one of the most wisely selected in the southern part of the state. Of his books he has given generously to the school and public library of Lanesboro.

In 1899 Frederick Arthur Drake was married to Nellie Frances Rafferty, a schoolteacher by profession, of Lanesboro. The two sons of Dr. and Mrs. Drake are Donald O'Neill and Charles Robert Drake, both of Lanesboro.

J. Early came from Virginia to Spring Valley Township with his son-in-law, Henry Kibler, in the spring of 1853. Mr. Kibler, who became a political figure of some importance in the county and state, took a claim in sections 24 and 25, where he subsequently built a sawmill; he also laid out a city, to be called Liberty, but his keeping a few goods for sale in his house was the nearest approach to urban activity that the settlement ever knew. Later he settled permanently in Fillmore Township.

Dr. Early staked out a claim near that of Mr. Kibler in Spring Valley Township and he perhaps was associated with his son-in-law in some of his enterprises. Although Dr. Early locally gained a favorable reputation as a medical man, he apparently was too little interested in his land to make improvements, and he presently removed into Iowa, where he lived out his life.

John Robert Eby, born in 1868, and his brother, **Cyrus Bowers Eby,** born in 1872, were graduated in the same class, in 1893, from the Medical School of the University of Minnesota. They were the sons of Aaron Eby, M.D., practicing physician and versatile writer, and Matilda Croft Bowers Eby, both natives of Kitchener, Ontario, Canada; Dr. and Mrs. Aaron Eby established their family home in Sebringville, Ontario.

The first Eby ancestors in America were Theodore Eby and his sons, who were among the earliest millwrights in Pennsylvania; the house of Christian Eby, which was built in 1749 near the millsite at Lititz, Pennsylvania, has remained in good condition to the present time. The grandfather of Aaron Eby was one of a group of Pennsylvanians who migrated to Canada early in the nineteenth century and settled in Waterloo County, Ontario. The grandfather of Matilda Croft Bowers was the owner of large lumber interests and a furniture manufactory in Waterloo County; cabinet makers traveled on horseback into Canada to make furniture for him, and many beautiful pieces of their handicraft remain as treasured heirlooms in the Bowers and Eby families.

Dr. and Mrs. Aaron Eby had seven children: Rose, who was the first woman to matriculate in the Provincial Medical School at Toronto; Elizabeth (Mrs. J. C. McFarlane); John Robert; M. Dorothy; Cyrus Bowers; Frederick, professor of education at the University of Texas and author of several books on religion and educational philosophy; and Grace D.

The two brothers, Robert and Cyrus, after receiving their early education and premedical instruction in the school at Sebringville and at the Stratford Collegiate Institute were attracted by a combination of circumstances to the Middle West and in the late eighties came to Minnesota, where they were to remain for many years. In the autumn of 1889 they matriculated at the University of Minnesota. Their maternal uncle, Jacob Eton Bowers, M.D., a physician in Minnesota from his graduation from medical school in 1868 until his death in 1922, was from 1878 into 1889 Superintendent of the State Hospital for Insane at Rochester, Olmsted County. On their arrival in Minnesota, Robert and Cyrus Eby visited their uncle in Rochester and subsequently both, but especially Robert, worked in the drug store of the hospital. In the superintendent's report for the fiscal year ending on July 31, 1888, it was stated, "J. Robert Eby has been added to the staff as apothecary and has relieved the medical officers of much in the way of minor details, leaving them more time to devote to the special care of the patients;" his name continued on the roster until the summer of 1890.

Inasmuch as the notes in this series of sketches deal primarily with practitioners of medicine who were in Fillmore County prior to 1900, and inasmuch as Cyrus Eby did not settle in Fillmore County until 1901 but was in Olmsted County as a physician on the staff of the State Hospital in the late nineties, a more detailed comment concerning his life and work will be made in connection with Olmsted County. It should be said here, however, that Dr. Cyrus B. Eby spent the greater part of his professional career, until his death in 1934, as an able, ethical, hardworking and much loved physician of Spring Valley, Fillmore County.

Dr. J. Robert Eby was licensed to practice in Minnesota in 1893, shortly after his graduation from medical school, and he first opened an office in Spring Valley. From 1894 to 1901 he was engaged in practice in Mountain Iron and Virginia, Minnesota. Subsequently he was, for several years, a resident of St. Anthony, Idaho. By 1912 he had settled permanently in Elko, Nevada. A well-qualified physician, he was a progressive member of the official medical organizations of the states in which he lived and of the American Medical Association. Dr. J. R. Eby died in Elko, Nevada, on October 26, 1944.

J. W. Eighmy (sometimes misprinted Eryhmy) was an eclectic practitioner of medicine and surgery in Fillmore County for about six years in the late sixties and early seventies.

In 1866, and probably earlier, Dr. Eighmy was resident in Hamilton, Sumner Township; by the early spring of 1868 he was established in the village of Fillmore, Fillmore Township, where for a time he was in partnership in a thriving drug store with J. D. Dain, and it was during his residence here that he was married, on August 23, 1868, to Miss Mary J. Priest, the daughter of a pioneer farmer in the township of Harmony.

In 1869, still in Fillmore, Dr. Eighmy was one of the founders and the first secretary, presumably, of the Fillmore County Eclectic Medical Society, which on May 3 of that year organized and adopted an elaborate fee-bill. In July he resigned the secretaryship and was elected treasurer. Dr. Eighmy, in 1871, perhaps latterly of Preston, although his residence there is unconfirmed, moved from Fillmore County to Brownsdale, Mower County. There for a few years he practiced medicine and placed on the local market "Dr. Eighmy's Magic Cure for Rattlesnake Bites," a preparation of his own compounding announced as a specific for many other bites as well. It has been said that in 1874 he left for California, where he died a few years later.

(To be continued in the December issue)

President's Letter

Minnesota Veterans Medical Care Program

UP TO the termination of the last war, veterans received medical care for service-connected disabilities in hospitals of the Veterans Administration. In some rare instances, diagnosis and treatment were permitted or arranged through physicians located in rural areas and appointed as "designated medical examiners" by the Veterans Facility.

To conduct this program, ninety-four hospitals with a patient capacity of 76,000 employed 53,000 persons, most of whom had civil service status. The total budget of the Veterans Administration for the fiscal year 1944-45 amounted to four and a half billion dollars. While no accurate estimate is available regarding how much of this total budget is for medical and hospital care, a rough approximation places it at 10 per cent. In January, 1945, 2,029 physicians were employed by the Veterans Administration. Their pay ranged from $3,250 to $7,500 per year. These were the conditions which existed prior to the recent Veterans Administration reorganization.

After the last war, General Omar N. Bradley was appointed Administrator of Veterans Affairs to succeed Brig. General Frank T. Hines. Among his first efforts in reorganization was the appointment of General Paul R. Hawley as Medical Director. This was soon followed by an announcement of a change in policy by which veterans would be given medical care in their home town or local hospital by their family physicians.

In this way, medical care of some twenty million veterans by the traditional American system of medicine became an actuality. Clearly, here is an opportunity to demonstrate that the medical profession is capable of eradicating abuses which had, as is characteristic, crept into the bureaucratic administration of a medical care program by a governmental agency. Here is an opportunity to prove that high quality of medical care can be furnished through plans provided by the organized medical profession at a cost not in excess of that of bureaucratic governmental medicine. And by so doing, future legislation designed to include veterans' dependents merely means an extension of customary practice arranged by the profession even though paid by federal funds.

Of two phases of this program, the first developed was affiliation of the Veterans Administration Hospital at Fort Snelling with the University Medical School. By such an arrangement, incidentally the first in the country, those veterans who required care in the Veterans Hospital were assured the highest possible quality of medical care.

But of more immediate concern to the profession at large was the second phase of the program. The Washington headquarters of the Veterans Administration requested the Minnesota State Medical Association to submit a contract including a fee schedule whereby medical care could be given veterans by physicians of their choice in their local communities.

Using the contract pattern established by Michigan, Kansas and California, the Veterans Affairs Committee of the State Medical Association, first with Dr. Richard Hullsiek and later with Dr. Ralph Creighton as chairman, finally after many meetings completed the fee schedule. The matter was then submitted to the House of Delegates which adopted the recommendation of the reference committee. The final contract and fee schedule, worked out in collaboration with officials of the Veterans Facility branch office, was submitted to and approved by the Council on September 29, 1946. Both the contract and the fee schedule have been submitted to the Veterans Administration, and it is hoped that the Minnesota Veterans Medical Care Program will soon become operative.

This throws a heavy administrative burden upon Mr. Rosell and his staff. Patience and cooperation will be sorely needed until the administrative wheels are running smoothly.

So, it might be said, we now are facing one of the crucial tests which may determine whether the control of medical practice is to remain within the profession or will be administered by some governmental agency. And the two criteria by which we or our plan will be judged are quality and cost.

Edwin J Simons

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE NURSING SHORTAGE

THE dearth of trained nurses today presents a serious problem which concerns hospitals, physicians and the public. This lack of nurses exists in spite of the fact that there are more nurses registered today than ever before. Several factors account for this situation.

In the first place, there are more jobs open for the trained nurse today. The full hospitals also require more nurses, many more than they did a few years ago. Then, too, the economic condition of the country enables more patients to employ nurses. No statistics are available as to how many nurses who have been discharged from the armed forces have returned to civilian practice, and it may be that many have not. Doubtless, the urge for young women to take up nursing as a vocation has lessened with the termination of the war, and the opportunities to earn high wages in other vocations requiring little or no training have undoubtedly discouraged them from entering upon three or more years of training without the prospect of commensurate compensation. The requirements established by the national organization of nurses also tend to restrict the enrollment in training schools. These high requirements have resulted in the closing of an appreciable number of the smaller nursing schools, particularly in the country districts. In certain cases the hospitals themselves have had to close as the incentive of training for certification as a Registered Nurse was absent.

How can this lack of nurses be met?

It has been felt by members of the medical profession for some years that there is a need for two rather distinct types of trained nurses: one, the highly trained nurse with an educational background above the average, who has received some instruction in the basic sciences and has had three or more years of hospital training; and the other, one who has had enough training to qualify her for the bedside care of a patient not seriously ill. The former nurse, typified by the present-day graduate of the better nursing schools, would be qualified for supervisory positions in hospitals and as instructors in training schools. The latter nurse might not have met the requirement of having been in the top third or half of her class in high school, but still would be suitable material after a year or two of training in a hospital to qualify her to be a highly satisfactory bedside nurse, both in the home and hospital.

An editorial entitled "The Training of the Graduate Nurse," which appeared in the July issue of the *Virginia Monthly Medical Journal,* proposes that the training period for nurses be cut down to two years by eliminating some of the didactic work, and that those who desire take postgraduate work to qualify them to meet registered nurse requirements in other states. It was felt that if the Nurses Board in Virginia should take this step, other states would follow, and the national organization of nurses would also change its requirements.

Already independent organizations in various parts of the country, including Minneapolis, have undertaken the training of practical nurses. Educational requirements are not so exacting, and the training course is limited to nine months in a hospital. The resulting practical nurse has proved, in the minds of many physicians, to be highly satisfactory for the bedside nursing of patients suffering from many types of illness.

Steps are being taken in Minnesota by those interested in the training of practical nurses to submit a bill in the coming legislature providing for the certification of young women who have accomplished this short course of training.

It is our opinion that, rather than to shorten the period of training at present required for a registered nurse, a distinctly different type of nurse should be trained to be known preferably by some other term such as "attendant nurse." This term would signify a certain amount of training as distinct from the self-styled practical nurse who may have had no training at all. It is felt that the establishment of this shorter course might solve the problem of some of the smaller hospitals which have been operating under such handicaps or have been forcd to close.

It is to be hoped that, if and when legislation is proposed to provide for certification of practical nurses or attendant nurses or whatever they are termed, the hospitals, nurses and medical profession will co-operate to insure passage of the bill.

SULFATHALIDINE IN INTESTINAL DISORDERS

INTESTINAL infections have always posed a serious problem to practitioners of medicine. This problem has been emphasized repeatedly in medical writings of all time. It has been brought home with emphasis to every physician who is called on to treat patients who have intestinal disturbances.

With the advent of sulfonamide compounds it appeared that a potent weapon to combat these infections had been discovered. In a larger sense, this has been true. However, many of the earlier drugs of the sulfonamide series, because of their toxicity, did not lend themselves well to the treatment of the intestinal disturbances. It became obvious early in the use of these drugs that large amounts of any given drug would be necessary to achieve success, because in almost all these infections there is extensive intestinal involvement. Furthermore, large quantities of the drug would be necessary to cover the infected surface. Moreover, the drug would be carried through the intestinal lumen relatively fast, because there is usually an associated diarrhea. Still, it was found the drug remained in contact with the intestinal wall sufficiently long for considerable absorption to take place. Almost immediately after use of the sulfonamides was instituted in the treatment of intestinal infections, investigators attempted to produce drugs which exerted less toxic effects and had greater therapeutic effectiveness.

Through the years this has been the effort in relation to each drug produced for intestinal use. Among the least toxic of these drugs have been the various derivatives of sulfathiazole. One of the least toxic of these, but having therapeutic effectiveness, is phthalylsulfathiazole (sulfathalidine). This is the phthalic acid of sulfathiazole. This drug has some advantages over its predecessors, such as sulfaguanidine and sulfasuxidine, in that it is sparingly absorbed from the gastrointestinal tract, is rapidly excreted in the urine, and has been found in the test tube to have from two to four times the bacteriostatic activity of succinylsulfathiazole (sulfasuxidine). Finally, smaller doses of this drug than of any of the other drugs are therapeutically effective.

Streiher encountered no toxic reactions in the treatment of 100 patients with this drug. In a rather large series of cases of the streptococcic form of ulcerative colitis in which we have given sulfathalidine at the Mayo Clinic only an occasional toxic reaction was noted. One patient, a woman forty-seven years old, had similar reactions to sulfathiazole, succinylsulfathiazole, azosulfamide and phthalylsulfathiazole. Another, a woman fifty-five years old, had a severe reaction (fever, marked generalized erythematous rash and general malaise) to succinylsulfathiazole and mild similar reactions to phthalylsulfathiazole. In most cases, however, when a reaction to one or another sulfonamide drug occurred, no reaction occurred to phthalylsulfathiazole. From time to time, cutaneous eruptions are mistaken for reactions to sulfonamide. A patient may be sensitive to other drugs administered at the same time. We have seen several such instances of such sensitivity. Many of the patients treated at the Mayo Clinic showed an initial satisfactory response to succinylsulfathiazole, azosulfamide or sulfathiazole, but the response was not sustained. A sustained response was promptly obtained when phthalylsulfathiazole was administered. In one group of cases the response to phthalysulfathiazole was good in 70 per cent, fair in 3 per cent and slight in 3 per cent. No apparent response occurred in 24 per cent of the cases. By "response" is meant reduction in the number of stools, decrease or disappearance of blood from the stools and relief from the concomitant symptoms of toxemia. Something should be said about the severity of the disease in these patients. In 70 per cent of the cases in which this drug was given at the Mayo Clinic the disease was severe, and in 20 per cent it was in the insidious stage. In cases in which the disease was of the so-called fulminating variety, the response to the use of phthalylsulfathiazole was good in a half, but in the other half no apparent response was obtained. Most of the patients who had severe symptoms obtained at least a satisfactory if not a good clinical improvement when phthalylsulfathiazole was administered. Other clinicians have found that patients who had the acute form of the disease obtained improvement comparable to that secured by those who have the chronic form.

The drug has been particularly effective in the treatment of so-called regional ulcerative colitis, at least in helping to abate the active symptoms of the disease so that operation could be performed more safely. The same can be said of its use in the syndrome of regional enteritis.

Sulfathalidine has been effective in some cases of chronic bacillary dysentery.

Sulfathalidine also has played an important role in the pre-operative care of patients who are to undergo intestinal surgery. Unless obstruction or the patient's general condition have contra-indicated it, we have been administering 150 grains (9.6 gm.) of sulfathalidine the first day and 90 grains (5.8 gm.) on the subsequent three days of the pre-operative period. The routine administration of this drug or others of the sulfonamide series intended for intestinal disturbances, mentioned elsewhere, together with other measures of pre-operative care, has resulted in a remarkable reduction in the fatality rate after intestinal operations.

This drug seems to have found a definite and valuable place in the treatment of a variety of intestinal infections. How well this pre-eminence will be sustained, with the advent of other drugs and the newer antibiotic agents, remains to be seen.

J. Arnold Bargen, M.D.

YOUR BENEVOLENT SERVANT

THE Minnesota Cancer Society has planned a well-rounded program for 1947 which includes three projects of special interest to physicians:

1. A postgraduate course on cancer
2. A monthly Cancer Bulletin
3. A Cancer Research Institute

The continuation course at the University of Minnesota for the study of cancer will be of unusual quality. Representatives from each county medical society will be invited with expenses paid by the Minnesota Cancer Society. The dates are January 2, 3, and 4, 1947. Specially selected speakers outstanding in the cancer field will be on the program.

A monthly cancer bulletin of unusual excellence with colored illustrations and a simple concise style, originally published by the Cancer Committee of the Illinois State Medical Society, will be reprinted at the expense of the Minnesota Cancer Society and mailed out to our membership.

The Minnesota Cancer Society intends to finance the construction of a Cancer Research Institute at the University of Minnesota. The details of this project are not ready for publication.

Your Committee on Cancer hopes that the various county medical societies will seriously consider organizing Cancer Information or Detection Centers in the near future.

Arthur H. Wells, M.D.
Chairman, Committee on Cancer.

VACCINATION AGAINST INFLUENZA

INFLUENZA, otherwise known as the "flu" or la grippe, is endemic throughout the country, especially in the winter months, and occurs in epidemics that are sometimes pandemic in nature. The infection has been definitely proved to be caused by a virus, and two types, A and B, with different immunological reactions, have been isolated. Type A, discovered by Smith, Andrews and Laidlaw, is the more severe type and has been found to have an incubation period of twenty-four to forty-eight hours following nasal inoculation. The less severe Type B virus was identified in 1940 by Francis and Magill, and has a shorter incubation period of twelve to eighteen hours.

Vaccine for Types A and B influenza virus is made by inoculating hens' eggs and, following incubation, extracting the virus from the embryo's red cells, inactivating the vaccine with formalin and preserving it with merthiolate. Experience in the army showed a reduction in incidence among vaccinated troops to 2.22 per cent as compared with 7.11 in controls, with the use of vaccine made in this way. This led to the use of this vaccine for more than 5,000,000 members of the armed forces. The vaccine is reported to have been at least 75 per cent effective, with only 2 per cent of those inoculated with the usual dose of 1 c.c. experiencing general reactions with fever and malaise, and some 60 per cent having a local swelling and redness at the site of inoculation.

The mixed A and B vaccine is now available in two forms: the vaccine produced by the blood absorption method, used by the army, and another preparation made by a calcium phosphate

(Continued on Page 1160)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PLAN TO PERPETUATE BLOOD DONOR SERVICE WITH STATE BLOOD BANK

Plans to perpetuate the Minnesota blood donor service begun during the war are beginning to take shape. These plans, which received the approval of the Council of the Minnesota State Medical Association at its meeting in February, 1945, were advanced even further at a recent meeting in the office of Governor Thye.

Meeting in the Governor's office was a committee composed of doctors, Red Cross leaders and Department of Health representatives, including Dr. A. J. Chesley, executive officer of the Health Department. The Governor called upon the committee to take the following steps:

(1) Begin immediate development of a state program, co-ordinating the work of private agencies; (2) Work out a plan to make the blood plasma available to anyone needing it; (3) Establish a co-operative arrangement with the Red Cross, State Highway Patrol, State Department of Health and various hospitals and municipalities; (4) Prepare a survey of the extent of the need for blood plasma; and (5) Formulate specific recommendations for state participation.

Begin Survey Immediately

The committee has decided to get the work of the survey underway immediately so that the program can be launched as soon as possible. It was reported at the committee meeting that while there are ample plasma supplies at present, at the rate these supplies are being drained, the same may not be true a year from now.

The committee has also agreed that the Minnesota Blood Bank will deal only in blood plasma and will leave the problem of whole blood supplies up to the various localities in the state, since it is almost impossible to store large quantities of whole blood for long periods.

The Blood Bank is to be carried on by the Red Cross, it has been decided, and the distribution of the blood plasma will be the responsibility of the State Health Department.

Chairman of the Governor's committee which has charge of the Minnesota Blood Bank project is Dr. Paul F. Dwan, clinical professor of pediatrics at the University of Minnesota. Working with him are Dr. Owen H. Wangensteen, professor of surgery, University of Minnesota; Stanley Hawks, chairman of the Minneapolis Red Cross chapter; A. J. Veigel, vice chairman, Civilian Blood Donor Program, St. Paul; Dr. T. H. Seldon, Mayo Clinic; Dr. Paul W. Kabler, chief of laboratories at the State Department of Health on the University campus; and Dr. Claude Kennedy, chairman of the Hennepin County Medical Society Blood Bank committee.

VETERANS MEDICAL CARE PROGRAM TO BEGIN OPERATION SHORTLY

The Medical Advisory Committee on Veterans Affairs and the Council have approved the proposed contract and fee schedule for veterans medical care in Minnesota and have referred them to the Veterans Administration for acceptance.

When the program gets under way it will be under the direction of an Operating Committee of the Minnesota State Medical Association, which will be appointed to supervise this work. The State Office is enlarging its quarters by taking on an additional wing to house the physical plant that will be required for this activity. Simplification of forms to keep paper work to a minimum, preparation of simple instructions to physicians on the operation of the program, and a check on office procedures elsewhere where the program has already been set up are all under study at the present time.

When the Veterans Administration approves and signs the contract, the first contact between the doctors and the new Veterans Medical Service Operating Committee will come through a letter which will be sent out to the physicians enclosing a postcard which the physician will sign to indicate his desire to participate in the program. Once that card has been placed on file, all future contacts and inquiries relative to medical services to veterans will be directed by Minnesota physicians to the Veterans Medical Service Operating Committee at the State Office and not to the Veterans Facility.

SOCIALISM SEEN TAKING SIDE-DOOR APPROACH

Wagner-Murray-Dingell salesmen haven't sold anything at the American front door yet, but some of their products are getting in through the side entrance.

A bulletin from the Insurance Economics Society of America makes this observation, pointing out several pieces of legislation that have been slipped into the statute books almost unnoticed, to pave the way for state health insurance.

Among these innocent-appearing measures is the railroad unemployment compensation act that provides $25 a week for twenty-six weeks to railroad workers for unemployment resulting from accidents or sickness. This bill was passed in the closing days of the 79th Congress.

And there was the amendment to the social security act which passed at the last moment, providing for the turning over of accumulated taxes paid by employes for unemployment insurance to those states that enact unemployment disability compensation measures.

An amendment to the National Service Life Insurance act also managed to squeeze in. This permits veterans to add disability insurance to their government life insurance in the amount of $5 a month benefit for each $1,000 worth of life insurance which they hold.

Even though the American public may not be conscious of these piecemeal approaches to the final objective—state health insurance—nevertheless, the ease with which they got by constitutes a real threat. If many more like measures gain acceptance, the country will unwittingly be conquered by degrees and political control of medicine will be here, without the people ever knowing it was on the way.

BATTLE FOR CONTROL OF MEDICINE GROWS EVER MORE INVOLVED

The battle for the preservation of the American System of Medicine grows ever more involved. On every hand more and more organized groups are entering the picture, working toward the objectives of political control of medicine. Some groups seek to place the control in the hands of the consumer through the establishment of more and better health co-operatives. These consumer-control advocates, AMA officials have pointed out, are trying to "change the principles of medical ethics, medical education and the very methods of medical practice." Labor groups have also decided to get into the fight with their own prepayment plans and are seeking the passage of legislation which will enable them to sell their own health insurance contracts.

Among the recent organizations to come forward in behalf of state health insurance has been a group calling itself the "Committee for the Nation's Health." Having received a citation from President Truman for its earnest efforts "to inform the American people of the values of a comprehensive nation-wide health program and to co-operate with other organizations in promoting the prompt passage of needed legislation," the group has begun distributing literature setting forth its major arguments.

Bulletin Presents "Facts"

Here is a sample of the kind of bulletin which they are publishing. In pamphlet form, it presents four "FACTS" in bold type with an array of supporting statements underneath in this fashion:

FACT: Existing medical facilities and services cannot cope with America's urgent health needs."

(Under this heading the committee cites the selective service rejection figures, the prevalence of chronic diseases and physical defects in this country, the accident rate and the cost to the nation in man-hours and dollars lost, the lack of proper distribution of hospital facilities, the doctor shortage in rural areas and the maternal and infant mortality rate.)

FACT: Despite our great progress in medical techniques, we lag behind other countries in many health records."

(Here the committee maintains America has higher infant mortality rates than seven other countries; that seven to eleven countries had lower death rates among children; and that 20 or more countries have lower adult death rates—that is in the 35-64 age group.)

FACT: The burden of sickness costs falls unevenly, unpredictably and often on those unable to carry it.

(In support of this statement figures are cited on the cost in per cent of income for medical care for the average family, and it is maintained that people with low incomes have more sickness and need more medical care, yet they receive much less than the higher income groups. The bulletin points out that the burden of medical bills falls on the self-supporting people of moderate means; that when they are unable to pay, it means lowered incomes for doctors; and that business is affected since sick people "aren't good customers." Attention is drawn to the fact that "Medical expenses are the most frequently given reasons for borrowing from small loan companies.")

FACT: Nothing short of passage of the Wagner-Murray-Dingell Bill will provide for the nation's health needs.

(Under this heading is a summary of the bill's provisions.)

Presents Merits of Bill

The bulletin assures the reader that medical services under the Wagner-Murray-Dingell Bill will be available to employed persons, farmers, businessmen and other self-employed and *all* of their dependents; that there will be freedom for patients and doctors; that the cost will be taken care of by organizing existing expenditures, not by spending any new money. It maintains that the bill will see that preventive medicine is provided for and that administration will be decentralized. Medical research and education are to be added, and for the average doctor a larger and more stable income will result.

"Voluntary health insurance plans will not meet the need," the bulletin asserts. "The health insurance plans sponsored by medical societies operate in less than half the states, have not given evidence of extensive growth, usually offer only limited services at relatively high cost and their management includes no representation of the people who pay the bills."

Groups of the type which authored the above statements are saturating the country with this kind of propaganda. This particular group even has the sanction of the churches in this country, through the endorsement by Bishop Oxnam, President of the Federal Council of Churches of America.

Council Study Answers Committee

The Research Council for Economic Security has the type of thoughtful answer needed to silence the clamorings of this Committee for the Nation's Health. The Council has recently completed an exhaustive study and has published the findings in an article entitled "Our National Health Problem."

"Those who advocate some single measure to safeguard national health," says the Council, "fail to realize the complexity of the problem."

The Council points out that health conditions in this country have not stood still, that "over the last thirty to fifty years, both public and private enterprise have made great strides in improving health conditions.

"Public enterprise has made its contribution in the field of sanitation and public hygiene as well as education. Private enterprise has brought about profound changes in the kind and amount of protection people have against illness, accident, and other hazards. This is not only true of medical science and its application, but applies equally strongly to the expansion of individual and groups insurance, of Blue Cross Plans and prepaid medical care."

The study which the Council has made shows the enormous differences among the forty-eight states in population, medical facilities and other matters related to health. For instance, in heart disease, of the nine states with the highest mortality rate, seven are in New England. People in New England reach a higher age than any other region and since heart disease is a disease of old age, this explains why more people die from heart disease in New England. The death rate from heart disease in this region is evidence of long life, not poor health..

Cite Cancer Mortality

To cite another interesting fact, cancer mortality is most pronounced among older persons having good incomes and living in cities. Six of the seven highest states in cancer deaths are in New England, while influenza and pneumonia death rates are highest in the South where poverty and poor sanitation are important contributing factors.

The study shows clearly how much the health problems of one community differ from another, how disease attacks here and there, as if organized into small guerilla bands, which must be conquered one at a time. Hence, no big, all-inclusive remedy is possible.

The Council points out that the same unevenness shows up in the distribution of medical facilities, although for other reasons. This means that a mere multiplication of existing facilities would not solve the problem.

"No matter what conditions we undertake to improve," says the Council, "we would waste our efforts if we blanketed the country with a packaged program." The study shows the grave danger in oversimplifying the problem. If there are, for example, two or three times as many physicians and hospital beds in one state as in another, the remedy is not to provide two or three times the number of physicians and hospital beds in the underprivileged area. The need is not for mere addition of numbers, but for a reorganization of services and for more strategic placement of facilities that are adapted to the specific needs of each section.

Must Improve General Conditions

The one basic principle which stands out above all others, according to the Council, is that "the health of the people ultimately can be safeguarded not so much by meeting problems of immediate disease as by improving all the conditions of life which affect health."

Hundreds of attempts have been made and are being made which have direct or indirect bearing upon the improvement of our national health conditions, the Council says. It is the conclusion of the groups that these attempts will continue to expand unless curtailed by competing federal services.

Whereas it is the sincere desire of many groups to take the sane and sensible approach to the problem of health needs, it can be shown that state health insurance has often been fostered for political reasons and not because of a demand from the people themselves.

Bismarck, in 1883, forced the passage of the law legalizing state control of medicine in Germany simply because he needed political capital to use against the Social Democrats. As for the British system, it was admitted by Lloyd George in 1938 that "It is probable that the need of the Liberals to take votes from the growing Labor Party had more to do with the adoption of health insurance than the need of the poor for medical care."

Political expediency has been such a universal reason for the adoption of health insurance that a noted sociologist recently termed it "the politician's panacea for social unrest." The element of socialism in state control of medicine and the fact that the underlying principles of state health insurance run counter to the principles of freedom of action embodied in Democracy constitute the more serious objections to such systems. Opponents of socialism see in it a final end to all initiative. As the British novelist, Charles Morgan, so aptly phrased it: "Socialism, as now interpreted, is competition without prizes, boredom without hope, war without victory, and statistics without end."

NORTH CENTRAL CONFERENCE HELD IN SAINT PAUL, NOVEMBER 10

The North Central Medical Conference, including physicians from the states of Iowa, Minnesota, Nebraska, North and South Dakota and Wisconsin met at the Hotel Saint Paul on Sunday, November 10, 1946.

The conference opened at 10 a.m., with dinner at 12:30 and an afternoon session at 2 o'clock. In conjunction with the conference, one of the regional meetings of the AMA Council on Medical Service was held.

Among the important guests invited to attend were Dr. George F. Lull, AMA Secretary; Mr. Thomas Hendricks, Secretary of the AMA Council on Medical Service; Dr. E. J. McCormick, Toledo, Ohio, Council chairman; Dr. L. W. Larson, Bismarck, North Dakota, member of the AMA Committee on Rural Medical Service; Dr. G. D. Williams, Veterans Administration, Washington, D. C.; and Dr. H. E. Hilleboe, Bureau of State Services, U. S. Public Health Service, Washington.

As usual, talks at the conference featured current, mutual medical problems in this area, with ample periods of discussion allowed in which all doctors concerned were urged to participate.

MASS CHEST X-RAY SURVEY IN MINNEAPOLIS

A program which will provide free chest x-rays for all of the residents of Minneapolis has been approved by the United States Public Health Service. Intentions to launch such a program were announced at a meeting September 20 of the State Committee on Tuberculosis by the Board of Directors of the Hennepin County Medical Society.

The Public Health Service is to provide seven mobile testing units and a staff, which, it is estimated, will represent an investment in local health improvement of at least $500,000.

This mass chest x-ray survey is the first to be attempted in a city as large as Minneapolis. And to justify the expenditure involved, Dr. Frank J. Hill, Minneapolis Health Officer, has announced that adequate follow-up programs will be provided to make it count in a long-term health program for Minneapolis.

At present a planning committee is being named by the Hennepin County Medical Society to make the necessary preparations for the program, which, it is expected, will begin in the spring and will take several months to complete.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota
Julian F. Dubois, M.D., Secretary

Minneapolis Woman Pleads Guilty to Criminal Abortion

Re. State of Minnesota vs. Blanche Rowland, also known as Blanche Roland.

Blanche Roland, sixty-three years of age, 4905 Lyndale Avenue South, Minneapolis, entered a plea of guilty in the District Court of Hennepin County to two separate informations each charging her with the crime of abortion. Because of the defendant's age and the condition of her health and upon the recommendation of legal counsel for the State Board of Medical Examiners, Judge John A. Weeks sentenced the defendant to two separate terms of not to exceed four years in the Women's Reformatory at Shakopee and placed the defendant on probation. Judge Weeks told the defendant that unless she got out of the abortion racket and stayed out of it, not even her health or her age would keep her from serving eight years in the Women's Reformatory at Shakopee.

The defendant, who claims to be a licensed embalmer, when questioned by Judge Weeks as to her knowledge of doing criminal abortions, stated that many years ago she worked as a practical nurse for a South Dakota doctor who occasionally performed abortions. She also admitted that she had been performing an occasional abortion in Minneapolis over a period of the last fifteen years. The defendant was arrested on August 2, 1946, by Inspector Bernath of the Minneapolis Police Department following the admission of a twenty-year-old Minneapolis girl at Minneapolis General Hospital suffering from the after-effects of a criminal abortion. While that case was under investigation, it was learned that a second patient had been admitted to another Minneapolis hospital also suffering from the effect of a criminal abortion performed by the defendant.

Saint Paul Painter Pleads Guilty to Criminal Abortion

Re. State of Minnesota vs. Thomas F. Jackamore

On September 10, 1946, Thomas F. Jackamore, fifty-five years of age, 822 Carroll Avenue, Saint Paul, Minnesota, entered a plea of guilty in the District Court of Ramsey County to an information charging him with the crime of abortion. On the same date the defendant, Jackamore, was arraigned on an information charging him with having previously been convicted of a felony, to-wit: grand larceny in the second degree. Judge Robert V. Rensch of the District Court of Ramsey County, before whom the defendant entered his pleas of guilty, referred the matter to the probation officer for a pre-sentence investigation. On September 17, 1946, Judge Rensch sentenced Jackamore to a term of two to eight years in the State Prison at Stillwater, stayed the sentence and placed the defendant on probation for the same length of time. If the defendant violates any of the laws of the State of Minnesota in the meanwhile, the stay of sentence will be revoked and Jackamore taken to prison to serve his sentence.

Jackamore, at the time of his arrest, admitted that he had performed five or six criminal abortions in the three months previous to his arrest, the complaint being filed against Jackamore on June 17, 1946. In the case for which he was prosecuted Jackamore admitted receiving $125. The abortion was performed at Jackamore's home by means of a catheter. Jackamore stated that he is a painter by trade and prior to that worked as a machinist.

Jackamore has a previous criminal record dating back to September, 1934, at which time an information was filed against him in the District Court of Ramsey County charging him with the theft of a typewriter from the State Capitol Building in Saint Paul. On September 18, 1934, Jackamore pleaded guilty to that charge and on September 25, 1934, was sentenced to serve sixty days in the Saint Paul Workhouse, which sentence he served.

Minneapolis Healer Sentenced to One Year Workhouse Term

Re. State of Minnesota vs. Walter W. Miller

On October 4, 1946, Walter W. Miller, fifty-three years of age, was sentenced by the Hon. John A. Weeks, Judge of the District Court, to a term of one year in the Minneapolis Workhouse. The sentence was stayed and the defendant placed on probation for one year. Miller had previously entered a plea of guilty on September 5, 1946, before Judge Weeks, to an information charging him with the crime of practicing healing without a basic science certificate.

Miller was arrested by Inspector Bernath of the Minneapolis Police Department on September 3, 1946, following an investigation which disclosed that Miller, who resides at 3316 Aldrich Avenue South, Minneapolis, was examining patients, prescribing diets, administering massage treatments and furnishing medicine. Miller charged no specified fee but indicated to patients that they could give what they liked. Miller stated that he was born in Minneapolis in 1893, and for eighteen years was employed by a large Minneapolis insurance company. He then claims that he discovered he had "psychic power" and went to California in 1926, returning to Minneapolis in 1934. He practiced as a healer at Cokato, Minnesota, in 1938, and in 1941 was located at Hutchinson, Minnesota. The defendant has no medical training of any kind and when asked by a police officer what people called him he replied that some called him "a healer or a faith doctor and some people called him a fake."

Minneapolis Osteopath Sentenced for Criminal Abortion

Re. State of Minnesota vs. Harry F. Rydell

On September 25, 1946, Harry F. Rydell, fifty-seven years of age, a licensed osteopath, with offices at 541 Lumber Exchange Bldg., Minneapolis, was sentenced by the Hon. John A. Weeks, Judge of the District

Court of Hennepin County, to a term of not to exceed four years in the State Prison at Stillwater for the crime of abortion. Rydell had pleaded guilty on September 4, 1946, to an information charging him with the crime of abortion. The case, at that time, was referred to the Probation Officer for a presentence investigation, and on September 25, Judge Weeks, following the imposition of sentence, stayed the sentence and placed the defendant on probation for four years. Judge Weeks warned the defendant that if he violated the laws of Minnesota, in any manner, the stay would be revoked and Rydell would have to serve his prison sentence.

Rydell was arrested by Minneapolis police officers on August 26, 1946, following an investigation which disclosed that Rydell had performed a criminal abortion on a twenty-nine-year-old married Minneapolis woman. At the time of his arrest, Rydell admitted that he was in the abortion racket and had been in it for several years. In the instant case, the patient stated the abortion was performed by injecting a paste. The patient also stated that she paid the defendant $100 for the abortion.

License of Minneapolis Physician Revoked for Theft

In the Matter of the Revocation of the License of Jerome Ettinger, M.D.

On July 12, 1946, the Minnesota State Board of Medical Examiners, following a hearing, revoked the license to practice medicine previously issued to Jerome Ettinger, M.D., Minneapolis, Minnesota. Dr. Ettinger had been cited to show cause why his license should not be revoked for immoral, dishonorable and unprofessional conduct following the apprehension of Dr. Ettinger on April 4, 1946, while in the act of stealing money in the dressing room adjacent to the operating room of a Minneapolis hospital. The citation contained twelve charges of theft against Dr. Ettinger over a period of four months from December, 1945, to April, 1946, and involving $352 in cash and a fountain pen from other doctors and interns. All of the thefts occurred in the dressing room of the same hospital. Dr. Ettinger appeared in person before the Medical Board and admitted the thefts.

Dr. Ettinger was born July 25, 1919, at Indianapolis, Indiana. He attended the Medical School of the University of Indiana from 1940 to 1942, and thereafter the Medical School of Northwestern University, graduating from the latter school with a Bachelor of Medicine Degree in 1943, and a Doctor of Medicine Degree September 30, 1944. He interned at the Michael Reese Hospital, Chicago, in 1944. He was licensed to practice medicine in Minnesota on February 8, 1946, by examination. The Medical Board was unable to find any extenuating circumstances in the case. Dr. Ettinger had an income of $200 per month at the time of the thefts and had on deposit, in two banks, $1550. At the time of his appearance before the Medical Board on July 12, 1946, Dr. Ettinger stated that he was then employed as a surgeon by the United States Veterans Administration at Van Nuys, California.

Tune in on station WCCO at 4:45 p.m. on Wednesdays and hear Lionel Barrymore as narrator in "The Constant Invader," second series of dramatization on tuberculosis. The role of the private physician and others who are taking leading parts in the campaign is dramatized. This program is a part of the educational program financed by Christmas Seals.

CHRISTMAS SEAL SALE

The fortieth annual Christmas Seal Sale to raise funds to fight tuberculosis is now on throughout Minnesota and the nation. The 1946 Christmas Seal design is a lamplighter and is symbolic of the light of knowledge about tuberculosis that has been spread through the little health seals.

Among the facts being emphasized in the educational campaign which accompanies the Seal sale are the following:

Tuberculosis causes more deaths than all other infectious and parasitic diseases combined.

It is the No. 1 killer between the ages of fifteen and thirty-five.

It takes a life in the United States every ten minutes.

Every year in the United States it kills one and one-half times as many men as women.

To commemorate the fortieth annual sale, each sheet of Seals has a center insert of four special Seals bearing the likeness of one woman and three men who made outstanding contributions to the first Seal sale in 1907.

They were Jacob Riis, Danish-born American who has been called "one of America's most useful citizens;" Miss Emily P. Bissell, social worker of Wilmington, Del.; E. A. Van Valkenburg, newspaper publisher and editor, and Leigh Mitchell Hodges, newspaper columnist.

Jacob Riis is honored on the 1946 Seals because in July, 1907, after receiving a letter from Denmark bearing Christmas Seals, which had been sold in that country since 1904, he wrote an article for an American magazine urging the adoption of the idea in this country as a means of financing a campaign against tuberculosis, then the first cause of death in the United States.

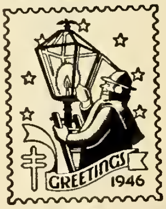
Miss Bissell recalled that article a few months later when some doctors appealed to her to help them raise funds to continue their care of a small group of tuberculous patients in Brandywine, Delaware. Miss Bissell believed that she could raise the needed $300 by selling Christmas Seals to her friends and their friends. So she herself designed a simple greeting stamp and had it printed at her own expense.

Mr. Van Valkenburg, editor and publisher of the *Philadelphia North American,* and Mr. Hodges, author of a column in that paper, learned of Miss Bissell's brave attempt to raise money for the tuberculous and threw the weight of the newspaper behind her campaign. At the end of the holidays, Miss Bissell was able to turn over to the physicians $3,000 instead of $300.

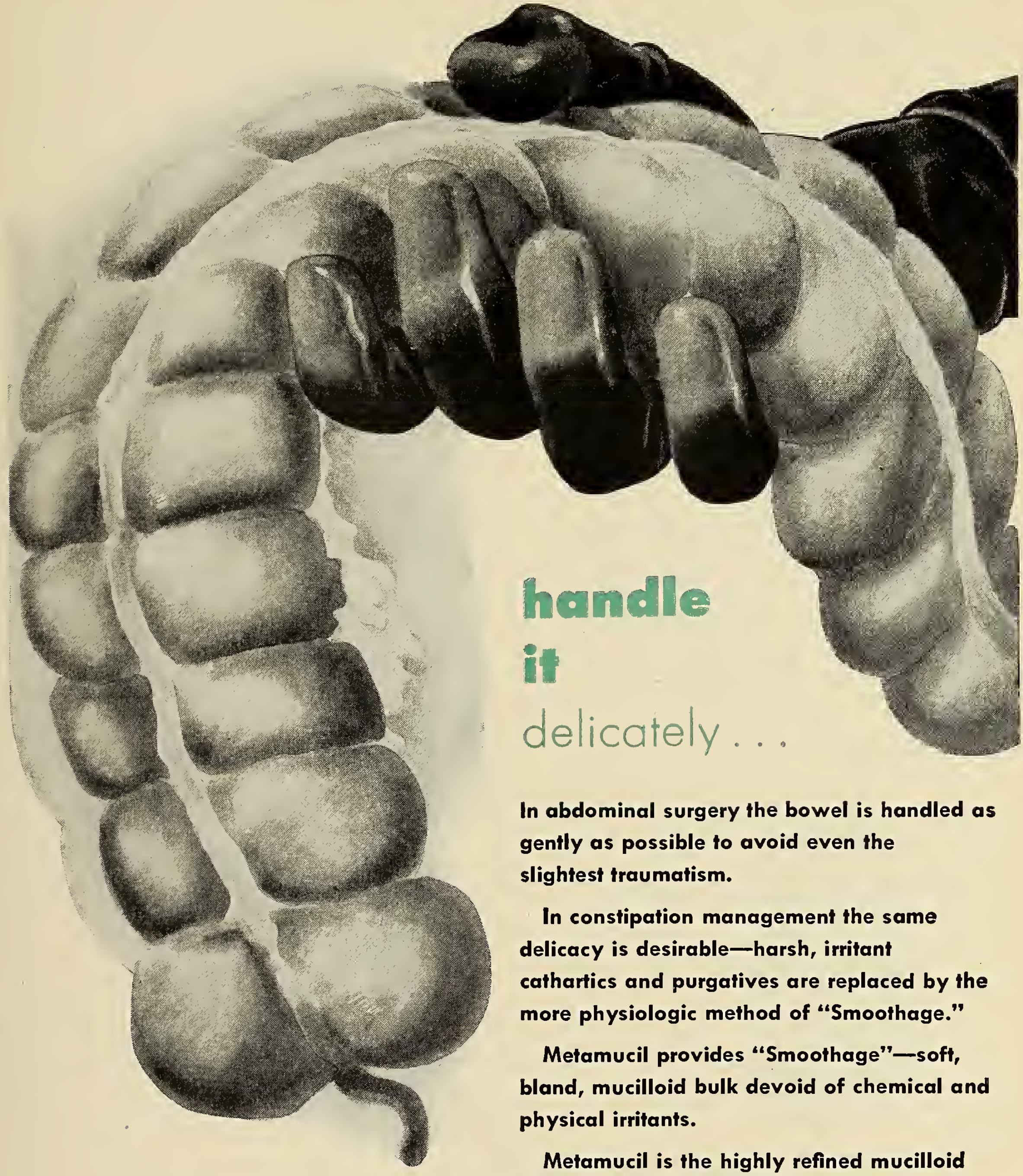
The following year the Christmas Seal sale was conducted nationally to raise funds for the campaign against tuberculosis throughout the country.

Since 1910, Christmas Seals have supported the tuberculosis control program of the National Tuberculosis Association, which had been organized in 1904, and its affiliated associations. The Minnesota Public Health Association is the branch of the National Tuberculosis Association which serves the people of Minnesota.

Christmas Seals



. . . Your Protection Against Tuberculosis



handle it delicately . . .

In abdominal surgery the bowel is handled as gently as possible to avoid even the slightest traumatism.

In constipation management the same delicacy is desirable—harsh, irritant cathartics and purgatives are replaced by the more physiologic method of "Smoothage."

Metamucil provides "Smoothage"—soft, bland, mucilloid bulk devoid of chemical and physical irritants.

Metamucil is the highly refined mucilloid of a seed of the psyllium group, Plantago ovata (50%), combined with dextrose (50%).

Metamucil is the registered trademark of
G. D. Searle & Co., Chicago 80, Illinois

SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

Reports and Announcements

MEDICAL BROADCAST FOR NOVEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

2—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
5— 4:45 P.M.	WCCO	The Nurse in the Maternity Ward
6—11:00 A.M.	KUOM	Clean Hands Are Always Safe Hands
7— 4:45 P.M.	WCCO	Safe Convoy for Expectant Mother
9—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
12— 4:45 P.M.	WCCO	Developments in the Field of Anesthesia
13—11:00 A.M.	KUOM	Your Teeth Influence Your Whole Body
14— 4:45 P.M.	WCCO	Ailments During Pregnancy
16—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
19— 4:45 P.M.	WCCO	The Nurse in the Diet Kitchen
20—11:00 A.M.	KUOM	Voice and Face Reflect the Personality
21— 4:45 P.M.	WCCO	Diet During Pregnancy
23—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
26— 4.45 P.M.	WCCO	Newborn Nursery
27—11:00 A.M.	KUOM	Good Eyesight Makes Learning Easier
28— 4:45 P.M.	WCCO	Care of Teeth During Pregnancy
30—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News

AMA CENTENNIAL

The American Medical Association will celebrate its centennial in Atlantic City, June 9-13, 1947. Elaborate plans are being made for this celebration.

Only Fellows and invited guests are eligible to attend. Membership in your state society is the primary qualification for Fellowship in the AMA. Fellowship dues and subscription to *The Journal A.M.A.* are both included in one annual payment of $8.00, which is the cost of *The Journal* to subscribers who are not Fellows.

If you are not a Fellow and plan to attend the Atlantic City session, which will be a milestone in medical history, you can save yourself considerable time and confusion when registering, if you will write now to the American Medical Association, 535 North Dearborn Street, Chicago 10, and ask if you are eligible to become a Fellow.

THIRD AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The Third American Congress on Obstetrics and Gynecology will be held from September 8-12, 1947, in the Municipal Auditorium in St. Louis, Missouri. The Second Congress was held in the same place in 1942 and the First Congress in Cleveland in 1939. Dr. Fred L. Adair of Chicago is again General Chairman.

While the Third Congress is similar in scope and program to the two previous meetings it will be larger in every way. The program under the direction of Dr. William F. Mengert of Dallas is being made up to appeal to the obstetric and gynecologic specialist, to the general practitioner interested in those fields, to the hospital administrator, and to nurses. The program will include sections for the public health doctor and the public health nurse. The medical section of the program is under the direction of Dr. Ralph A. Reis of Chicago, as in 1942.

The Scientific Exhibits are under the guidance of Dr. Jean Paul Pratt of Henry Ford Hospital. The Moving Picture Program is being made up by Dr. John Park of Washington, D. C. Dr. John Rock of Boston heads the Committee on Evening Speakers. The Technical Exhibit has been arranged by Dr. Philip F. Williams of Philadelphia. A Membership Committee in every state and in the territories is being set up by Dr. Ralph E. Campbell of Madison, Wisconsin, and plans are under way to have a special committee build up interest in the Congress in Central and South America. Dr. Harvey B. Matthews of Brooklyn heads the committee in charge of publicity. The General Advisory Committee is in charge of Dr. Howard C. Taylor, Jr. The Local Organization Committee in St. Louis is headed by Dr. Richard Paddock.

The Friday morning sessions of the Congress, September 12, are to be given over entirely to the National Federation of Obstetric-Gynecologic Societies. The program for these sessions will be arranged by a committee working under Dr. James S. Taylor of Altoona. One member of this committee, Dr. E. Lee Dorsett, of St. Louis, will arrange an evening speaker for the Federation of nationwide prominence who will present his viewpoints to a joint meeting of the Congress, the Federation and the general public.

GASTROENTEROLOGY AWARD CONTEST

The National Gastroenterological Association announces its Annual Cash Prize Award Contest for 1947. One hundred dollars and a Certificate of Merit will be given for the best unpublished contribution on Gastroenterology or allied subjects. Certificates will also be awarded those physicians whose contributions are deemed worthy.

Contestants residing in the United States must be members of the American Medical Association. Those residing in foreign countries must be members of a similar organization in their own country. The winning contribution will be selected by a board of impartial judges, and the award is to be made at the annual convention banquet of the National Gastroenterological Association in June, 1947.

Certificates awarded to other physicians will be mailed to them. The decision of the judges will be final. The Association reserves the exclusive right of publishing the

(Continued on Page 1160)

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Q. How are meats prepared for the soups?

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Q. How are vegetables prepared for the soups?

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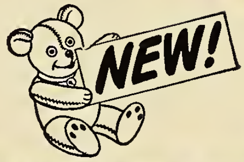

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(Continued from Page 1158)

winning contribution, and those receiving certificates of merit, in its official publication, *The Review of Gastroenterology*. All entries for the 1947 prize should be limited to 5,000 words, be typewritten in English, prepared in manuscript form, submitted in five copies, accompanied by an entry letter, and must be received not later than April 1, 1947. Entries should be addressed to the National Gastroenterological Association, 1819 Broadway, New York 23, N. Y.

WABASHA COUNTY MEDICAL SOCIETY

The seventy-eighth annual meeting of the Wabasha County Medical Society was held at Elgin on October 10, 1946, with an attendance of twenty-six members, guests and eight doctors' wives. The members convened at 4 p.m. at the office of Dr. Earl W. Ellis and the business session opened at 4:30. Dinner was served at the City Cafe at six o'clock, and a scientific session followed. The addresses were: "Paget's Disease, with Case Report," Dr. Ellis; "Present Status of the General Practitioner," Dr. Henry Diessner, of Minneapolis; "Communicable Diseases of Childhood and the State Survey of Child Health Services," Dr. George B. Logan, of Rochester.

New officers elected are: Dr. Bernard A. Flesche, Lake City, president; Dr. Robert N. Bowers, Lake City, vice president; Dr. William F. Wilson, Lake City, secretary-treasurer. Dr. Ellis was chosen as delegate to the State Medical Association, and Dr. Emery C. Bayley, Lake City, as alternate. Dr. Thomas Gibbs Wellman, Lake City, was elected censor for a term of three years. The carry-over censors are Dr. Robert A. Glabe, Plainview, and Dr. Robert G. Ochsner, Wabasha.

Dr. Ellis, the retiring president, Dr. Glabe, and Dr. Donald G. Mahle, of Lake City, were in charge of arrangements for the meeting.

VACCINATION AGAINST INFLUENZA

(Continued from Page 1150)

precipitation method which is several times weaker in virus content and, therefore, presumably less effective. One inoculation of 1 c.c. produces a sharp increase in immunity in two weeks in over 90 per cent of those inoculated, and only a slight decline occurs after four months. Antibody titres are still above prevaccination levels at the end of a year but protection should not be expected for more than a few months.

It is suggested that the dose of 1 c.c. of the mixed vaccine may be divided, giving 0.5 c.c. first and a second 0.5 c.c. in a week. In children, fractional doses at three-day intervals, until the full 1 c.c. is given, are recommended. In most adult cases, however, the full 1 c.c. dose is given. Individuals who are known to be sensitive to eggs should not be vaccinated.

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In Memoriam

JAMES TRENT CHRISTISON

Dr. James T. Christison, prominent pediatrician of Saint Paul for many years, died September 14, 1946, at the age of eighty.

Dr. Christison was born of Scotch parents at Southampton, England, October 2, 1865. His family moved to Ontario and he obtained his preliminary education at Collegiate Institute at Ingersoll, Ontario. He later attended the University of Michigan. He received his medical education from the Long Island College Hospital where he graduated in 1890 and the University of Minnesota Medical School in 1891. He began practice in Saint Paul in 1891 and took postgraduate work in pediatrics in Boston in 1896 and in New York in 1898. In 1913 he visited Vienna, Berlin and London.

Dr. Christison was a charter member of the Minnesota Chapter of Nu Sigma Nu, of which there are now only two surviving charter members, namely, Dr. George E. Senkler of Saint Paul and Dr. E. S. Boleyn of Stillwater. Dr. Christison was active in organized medicine, having been president of the Ramsey County Medical Society in 1917, president of the Minnesota State Medical Association in 1929 and delegate to the American Medical Association. His society membership included the Minnesota Academy of Medicine of which he was president in 1918 and the Northwest Pediatric Society. He joined the Miller Clinic, Saint Paul, upon its organization in 1920.

Dr. Christison was an active 33rd degree Mason, a former head of the Scottish Rite, and was named Grand Viceroy of the Red Cross of Constantine, the world's oldest Masonic organization. He served as president of the Minnesota Masonic Veterans Association, and was also active in the founding of the Shrine Hospital for Crippled Children in Saint Paul.

In 1910 Dr. Christison was one of the founders of the Saint Paul Baby Welfare Association which did so much for the care and feeding of children, an activity which has been merged with the Visiting Nurses Association. He also worked long and hard to secure a better milk supply for Saint Paul and was active in the Minnesota Public Health Association during its early years.

Dr. Christison became associated with the University of Minnesota Medical School in the early nineties and became Clinical Professor of Pediatrics. He was one of the group of professors for whom a testimonial dinner was given at the Minnesota Union on June 10, 1936 on the occasion of their retirement. Upon his resignation from the Editing and Publishing Committee of Minnesota Medicine in 1939, on which he had served as a member since 1919 and as chairman since 1932, the State House of Delegates passed a resolution expressing appreciation of his contributions to the practice of

(Continued on Page 1164)

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(Continued from Page 1162)

medicine in Minnesota and his services to organized medicine.

Dr. Christison was married in 1908 and is survived by his widow, Margaret Godwin Edgerton, a son, Robert, and a daughter, Mrs. William A. Warren and two brothers, John S. and William, all of Saint Paul.

Dr. Christison, affectionately known as "Christy" by his friends, of whom he had a host both in the profession and outside, was a gentleman in every way and a good doctor devoted to his patients over a period of nearly fifty years. In addition, he did much in the field of Public Health.

WALTER R. RAMSEY, M.D.

CARL MARTIN ROAN

Dr. Carl Martin Roan, Minneapolis, died on September 11, 1946, at the age of sixty-eight.

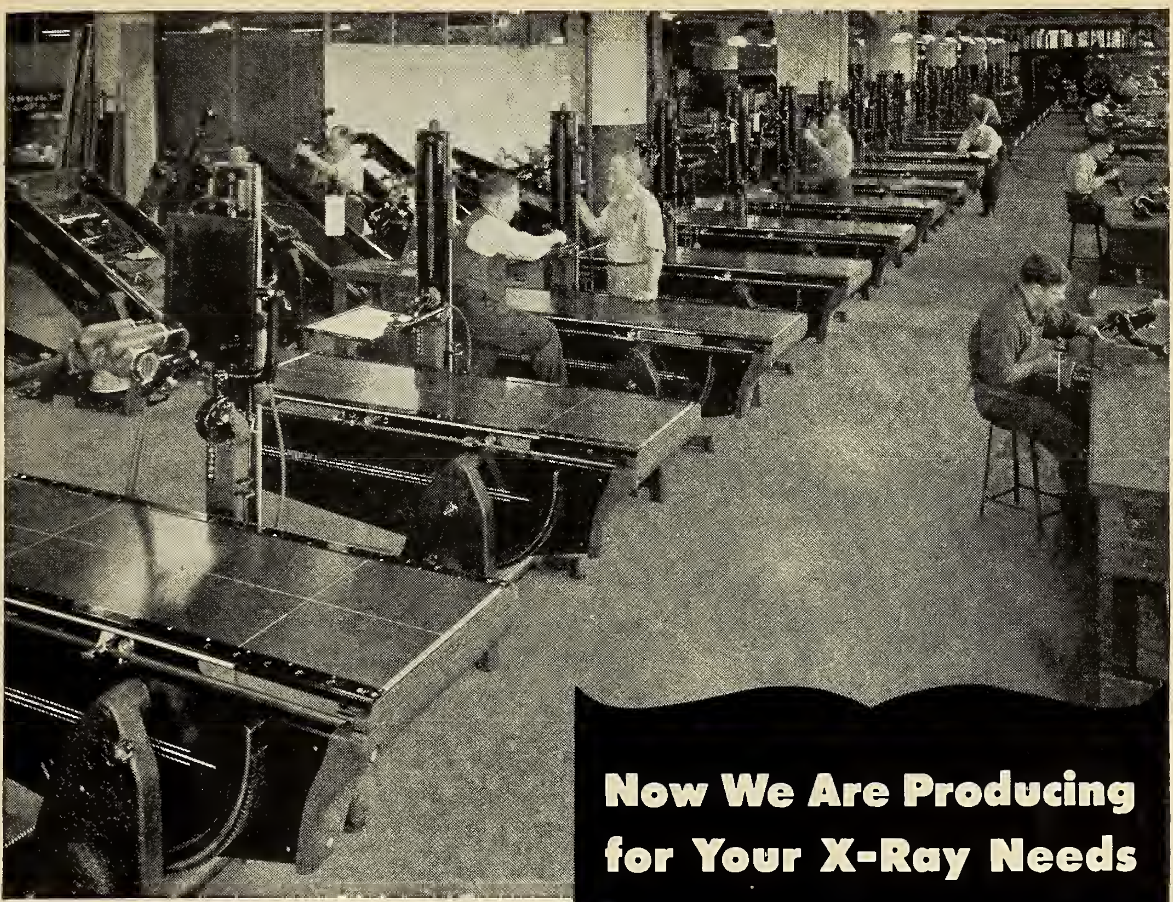
He was born in McLeod County, Minnesota, May 26, 1878, the son of Ole Roan Johnson and Beret Eggen who came to America in the 1850's from Norway.

He received his early education in Todd County, Minnesota, his high school diploma at Augsburg Academy and a B.A. degree at Augsburg College in 1904. In 1908 he graduated from the University of Minnesota Medical School and later took graduate work at Tulane University, New York University and the University of Copenhagen in Denmark.

On November 15, 1904, he married Marie Sletten in Minneapolis. Their children are Chester, Ove (deceased 1937), Morton, Mildred (Mrs. Thomas Marron), Grace, and Vincent. Grandchildren are Michael Roan, Judith and Patricia Marron. Surviving brothers and sisters are Mrs. E. O. Larson, Minneapolis, Mrs. Caroline Granum, Sundre, Alberta, Canada, and Levi Roan, Bellflower, California.

He was a member of the surgical staff of Deaconess Hospital and also instructor in their nurses' training school for thirty-two years. Some of his other affiliations included the Hennepin County Medical Society, Minnesota State Medical Association, Minneapolis Surgical Society and the Minnesota Pathological Society. He was also a Fellow of the American College of Surgeons, 1922; contract surgeon in United States Army, 1917-18, stationed at University of Minnesota; and deputy coroner of Hennepin County, 1908-18.

Dr. Roan was a member of Central Lutheran Church, a director of Lutheran Brotherhood Life Insurance Company, a director of the Union City Mission of Minneapolis, a director of the Twin City Federal Savings and Loan Association, a member of the Board of Public Welfare, co-founder of Ebenezer Home for the Aged, a member of the Minneapolis Charter Commission, the Minnesota and National Safety Council, Minnesota Territorial Society, Minnesota Historical Society, Minneapolis Athletic Club, Sons of Norway, Minneapolis Automobile Club, Commonwealth Club, and American Legion Giant Valley Post. He was an author of several books in Norwegian and in English.



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◆ Of General Interest ◆

Dr. Raymond C. Hottinger has resumed his practice at Janesville, with offices in the Miner Block.

* * *

Dr. Frank Krusen, head of the section on physical medicine at the Mayo Clinic, has been made a member of the National Arthritis Research Foundation.

* * *

Dr. James H. Bender, physician and surgeon, has resumed his practice in Brainerd with offices at 200B Iron Exchange Building.

* * *

Dr. Howard Kaliher, formerly of Foley, has joined Dr. M. Korda in partnership at Pelican Rapids, where they will operate a hospital.

* * *

Mrs. Dora S. Cremer, widow of the late Dr. M. H. Cremer, prominent physician of Red Wing, Minnesota, died October 7, 1946. Dr. Cremer passed away in 1934.

* * *

Dr. Paul Schoeneberger, formerly of Perham, who was recently separated from the Army Medical Corps after thirty months of service, has joined Dr. James J. Warner in the practice of medicine at Crookston.

* * *

Dr. Walter E. Richardson has closed his offices at Rushford and retired from private practice to become supervisor of first aid and health at the John E. Morrell Packing Plant at Sioux Falls, South Dakota.

* * *

Dr. Henry J. Kurtin, Blooming Prairie, who recently underwent an appendectomy at the city hospital in Owatonna, has completely recovered his usual good health and has resumed his practice.

* * *

Dr. Robert D. Mussey, of the Mayo Clinic, was named president-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at their recent meeting at Hot Springs, Virginia.

* * *

Joint monthly meetings are now being held alternately in Mankato, St. Peter, and New Ulm by the Redwood-Brown, Nicollet-Le Sueur and Blue Earth County Medical Societies.

* * *

Dr. John H. Cameron has closed his offices in Erskine and has gone to New York for postgraduate work in diseases of the eye, ear, nose and throat, in which he intends to specialize in the future.

* * *

A leave of absence has been granted by the Estrem Clinic at Fergus Falls to Dr. Robert D. Estrem for three years, during which he will do postgraduate work in surgery under a fellowship at the University of Minnesota Hospitals. Dr. Estrem will also be associated part time with the Veterans Hospital in Minneapolis.

Speakers at the Health Institute for Better Vision held in Duluth on September 25 included Dr. William A. O'Brien, of the University of Minnesota, Dr. Alvin G. Athens and Dr. Archibald O. Olson, both of Duluth.

* * *

Mrs. Bertha Elsey, wife of Dr. J. R. Elsey of Glenwood, Minnesota, died September 26, 1946. She is survived by Dr. Elsey and a son, Dr. Edward M. Elsey, also of Glenwood.

* * *

Dr. Karl H. Pfuetze, Cannon Falls, was elected governor of the American College of Chest Surgeons for Minnesota at the annual meeting held in San Francisco during the summer.

* * *

Dr. Hamlin Mattson of Minneapolis addressed the Kandiyohi-Swift-Meeker County Medical Society at Appleton on October 17. His subject was: "Newer Surgical Concepts in Inguinal Hernia."

* * *

Dr. H. Worley Kendell, who is at the Mayo Clinic in Rochester on a Baruch fellowship, has been made president-elect of the American Congress of Physical Medicine. Dr. Kendell will take office at the next annual meeting in September, 1947.

* * *

Dr. Robert G. Green was the speaker at the meeting of the Minnesota Pathological Society of the University of Minnesota Medical School held in the Medical Science Amphitheater on October 15. Dr. Green's subject was "Immunological Aspects of Cancer."

* * *

Dr. Gerald A. Knutson, Hallock, has purchased a Cessna, 140-horsepower plane and has already made several trips in it. Dr. Knutson, who took flying lessons during the summer, recently was granted a pilot's license by a Civil Aeronautics Authority examiner.

* * *

Dr. Edward T. Clarke, of Buhl, has been confined to the hospital at Hibbing where his illness was said to be serious, but not critical. Dr. Clarke entered practice in Buhl early in the year, following his discharge from military service.

* * *

Dr. Anton G. Sanderson has been appointed superintendent of the Deerwood Sanatorium, succeeding Dr. Edwin G. Hubin who tendered his resignation during the summer. Dr. Sanderson has been associated with the sanatorium at Walker for the past four years.

* * *

Dr. Arthur J. Myers, director of the tuberculosis section of the Minneapolis Health Department, was elected president of the Mississippi Valley Conference on Tuberculosis at the recent meeting in Chicago. Dr. Myers,

(Continued on Page 1168)

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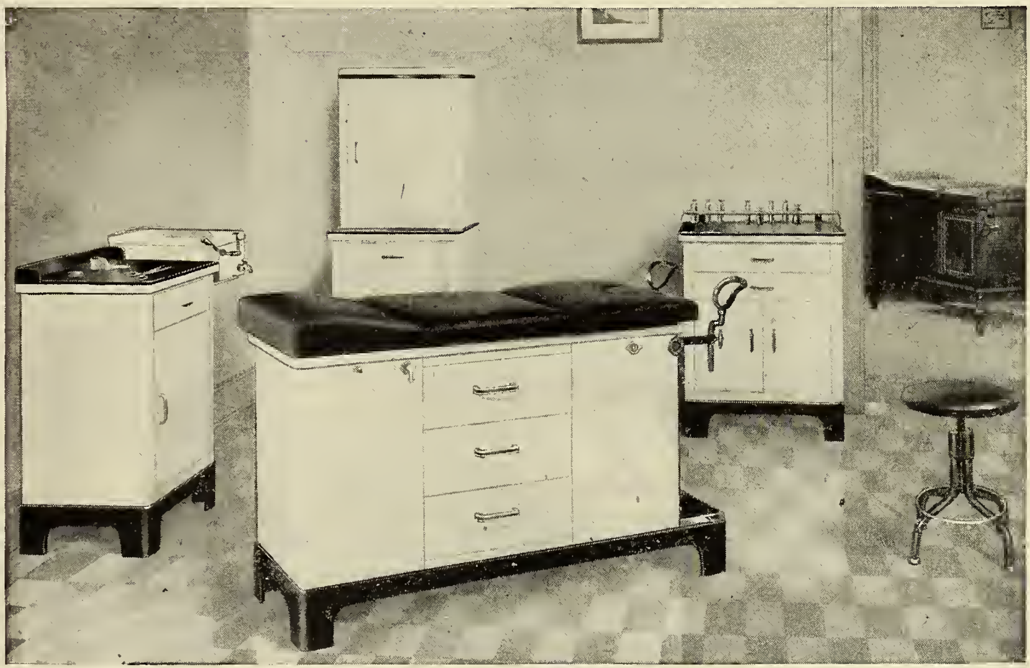

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(Continued from Page 1166)

who is professor of public health and medicine at the University of Minnesota, has been active in tuberculosis preventive work in Minnesota for more than twenty years.

* * *

The marriage of Dr. Walter Subby, formerly of Albert Lea and now resident physician at the Veterans Hospital at Fort Snelling, to Miss Margaret Moody Lathrop, of Saint Paul, was solemnized at the Salem Lutheran Church, Saint Paul, September 10.

* * *

Dr. and Mrs. W. J. Dailey, former residents of Blooming Prairie, who have been living in Oakland, California, for the past twenty-three years, have returned to Blooming Prairie to re-establish their home there. Before going to California, Dr. Dailey had practiced medicine and surgery in Blooming Prairie for twelve years.

* * *

After fifteen years of practice in Houston, Minnesota, Dr. L. Kenneth Onsgard has closed his offices there and has joined the staff of the Grandview Hospital in La Crosse, Wisconsin. A 1924 graduate of St. Olaf College, Dr. Onsgard, took his medical degree at the University of Minnesota in 1929.

* * *

Announcement has been made of the resignation of Dr. Lawrence J. Kaasa of Albert Lea, as chairman of the County Board of Health and also from the board of the Mineral Springs Sanatorium at Cannon Falls. Dr. Kaasa will hereafter be associated with the Veterans Administration in Minneapolis.

* * *

Dr. Charles M. Jessico, Duluth, has been released from active duty in the U. S. Naval Reserve and has resumed his practice of neuropsychiatry at the Duluth Clinic. While in service Dr. Jessico was a member of the staff of the U. S. Naval Hospital at San Leandro, California.

* * *

Robert H. Beals, son of Dr. and Mrs. Hugh Beals of Saint Paul, died October 16, 1946, of pneumonia and a heart complication at the age of twenty-nine. Mr. Beals drove an ambulance in the field service during the war, one of his assignments having been the beachhead at Salerno.

* * *

Drs. Howard K. Gray and Byrl R. Kirklin, of the Mayo Clinic, presented papers at the centennial celebration of the University of Buffalo at Buffalo, New York. Dr. Gray's subject was "Carcinoma of the Pancreas," and Dr. Kirklin's "Radiologic Diagnosis of Cancer of the Gastro-Intestinal Tract."

* * *

Dr. Walter E. Hinz, formerly of Lidgerwood, North Dakota, is now associated in practice with Dr. Howard E. Johnson at Bird Island. Dr. Hinz took his medical degree at Northwestern University and interned at Ancker Hospital in Saint Paul. For the past three years

(Continued on Page 1170)

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(Continued from Page 1168)

he was in the Army Medical Corps and served in both the European and Pacific Theatres.

* * *

At his own request, Dr. Arthur C. Strachauer has been retired as chief surgeon of the Minneapolis, Saint Paul and Salt Ste. Marie Railroad, according to an announcement issused by the company.

Dr. Frank R. Hirshfield, formerly associate chief surgeon, is Dr. Strachauer's successor. Dr. Leo C. Culligan will continues as assistant chief surgeon.

* * *

The Minnesota County Public Health Association has announced the election of Dr. Horton C. Hinshaw, of Rochester, as vice president of the Olmsted County Public Health Association. Dr. Hinshaw, who has taken an active part in the work of the State Christmas Seal organization, is also a vice president of the National Tuberculosis Association.

* * *

The quarterly dinner meeting of the Redwood-Brown Medical Society and Auxiliary was held at New Ulm on October 15, with the Nicollet-Le Sueur and Blue Earth Medical Societies and their Auxiliaries as honored guests. An interesting program included addresses by Dr. Albert M. Snell and Dr. John Waugh, of the Mayo Clinic.

* * *

The following officers were elected by the Southern Minnesota Medical Association at their meeting in Faribault; President, Dr. Charles M. Robilliard, of Faribault; First Vice President, Dr. Charles L. Sherman, of Luverne; Second Vice President, Dr. Lewis I. Younger, of Winona; Secretary, Dr. Wallace Merritt, of Rochester.

* * *

Dr. Philip K. Arzt, Saint Paul, has resumed his practice of neuropsychiatry in association with Dr. Gordon Kamman at 1044 Lowry Medical Arts Building. Dr. Arzt, who was a captain in the Army, was recently reelased from military service. His assignments were Valley Forge Hospital, McGuire Hospital, and Cushing General Hospital, in the order named.

* * *

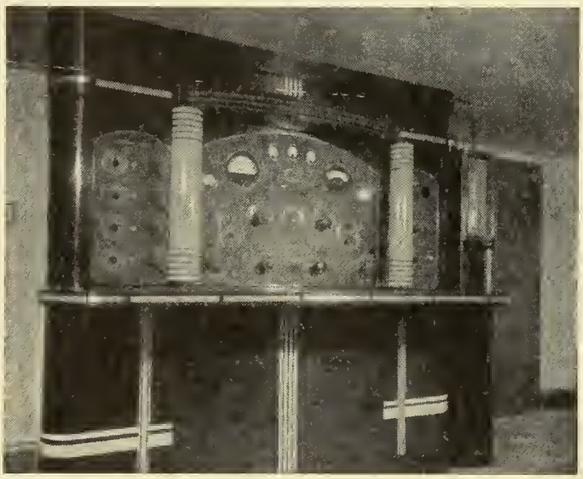
More than 2,000 persons felicitated Dr. William W. Will on the occasion of the celebration of his forty years of service at Bertha, Minnesota, on Sunday, September 22. Governor and Mrs. Edward Thye were in the receiving line with Dr. and Mrs. Will, and the first baby delivered by Dr. Will, now almost forty years old, was among those who attended the reception.

* * *

Dr. William O'Brien, director of postgraduate medical education at the University of Minnesota, James Baker, executive secretary of the Hennepin County Medical Society and R. A. Amberg, superintendent of the University Hospitals, were guest speakers at the short course for homemakers held at the University Farm in September.

(Continued on Page 1172)

Radiation Therapy Institute



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(Continued from Page 1170)

Announcement has been made of the appointment of Dr. Clare Gates as acting assistant health commissioner for Minneapolis. Dr. Gates, director of public health education in the Minneapolis Health Department, and co-ordinator of the emergency poliomyelitis committee, assumes the duties of the office for one year, during which the Civil Service Commission will hold examinations to secure a permanent appointee.

* * *

Dr. William D. Cleaves, who was in practice at Grand Rapids at the time of his induction into the Army where he served for forty-three months, is now located in Sauk Center with offices in the Hanson and Emerson Medical Building. A flight surgeon in the Air Corps, Dr. Cleaves' assignments included a year in the Air Evacuation Service in the Pacific.

* * *

Announcement has been made of the Appointment of Dr. Margherita C. Ciaramelli as physician in the Carleton College Health Service at Northfield. Officially, she will be known as assistant professor of health and physical education for women.

Dr. Ciaramelli graduated from Hunter College in New York City in 1940 and took her medical degree at the New York University College of Medicine in 1943.

* * *

Mayor Humphrey, of Minneapolis, has announced the appointment of Dr. Charles Merkert, Dr. Frank J. Hill and Dr. Clare Gates as members of a citizen's committee which has been organized for the purpose of studying municipal participation with the Federal government in a city-wide x-ray campaign scheduled to begin about March 1, 1947.

Dr. Merkert is chairman of the public health committee of the Hennepin County Medical Society; Dr. Hill is city health commissioner, and Dr. Gates is the assistant health commissioner.

* * *

The Van Meter Prize Award of $300,000 and two honorable mentions is again being offered for the best essays on original work in problems related to the thyroid gland. Essays should not be more than three thousand words long and may cover either clinical or research investigations. They must be presented in English and in double-spaced typewriting. Address entries to Dr. T. C. Davison, Corresponding Secretary, 207 Doctors Building, Atlanta 3, Georgia. Closing date of the contest is January 1, 1947.

* * *

Dr. Raymond D. Davis, formerly of Clearbrook, is now associated in practice with Dr. Bernard J. Gallagher in Waseca.

Dr. Davis took his medical degree from the University of Minnesota in 1934. Following his graduation he entered the Army where he was on active duty for sixteen months. At the termination of his military service he opened offices at Clearbrook, and remained there until joining Dr. Gallagher at Waseca.

Dr. Ernest S. Mariette, superintendent of Glen Lake Sanatorium and president of the Mississippi Valley Trudeau Society, who has been made president of the Society for a second term, gave the keynote address at the banquet which opened the Society's convention in Chicago on September 26. From there Dr. Mariette went to Philadelphia where he attended the convention of the American Hospital Association and presented a paper on "Postwar Trends in the Care of the Tuberculosis Patient."

* * *

After twelve years of general practice in Northfield, Dr. C. Dexter Lufkin will hereafter specialize in diseases of the chest. Before coming to Northfield, Dr. Lufkin specialized in this branch of medicine for four years. He was assigned to diseases of the chest while a commander in the U. S. Navy with assignment this year at the Naval Hospital at Sampson, New York, which influenced his decision to terminate his general practice. Dr. Lufkin has not yet decided on his location.

* * *

Officers of the Hennepin County Tuberculosis Association elected at a recent meeting of the Board of Directors are: President, Dr. Ernest S. Mariette, superintendent of Glen Lake Sanatorium; First Vice President, Stuart W. Rider; Secretary, W. R. Smith. Mrs. W. P. Christian was re-elected Treasurer and Prudence Cutright, Second Vice President.

The retiring president, Dr. Stephen H. Baxter, has held the office for the past eight years.

Dr. Paul A. Swedenburg, who was recently released from five years of military service, has entered practice in Glenwood, where he is sharing offices with Dr. Manford B. Dahle in the new Clinic building. Dr. Swedenburg, a graduate of the University of Minnesota Medical School, was formerly associated with Dr. Edwin J. Simons at Swanville. As a colonel in the Army Medical Corps, Dr. Swedenberg served for three years in this country and two years in the European Theatre.

* * *

Although Dr. William Wilson has been practicing at Lake City for fifty-two years, he is still on the job. Originally Dr. Wilson taught high school at Faribault where he also did reporting for the *Tribune*. A natural interest in physiology led to six months' study with a physician and then medical college in Chicago.

In talking over his pioneer days in the profession, Dr. Wilson recalled that he delivered three babies in a period of twenty-four hours. One required a ten-mile trip by horse and buggy into the country; one was at Lake City; the third was across the river in Wisconsin, and it took both a boat and a horse to get him there.

* * *

Among the war souvenirs brought back by Dr. Fred W. Gaarde, Jr., of Rochester, from the Pacific Theatre, where he was a member of the Army Medical Corps, is a Japanese soldier's diary recording the battle of Saipan from the time he landed on the island early in

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June until his capture or death. It is probable that this occurred on July 7, since the last entry is dated July 6 and reads: "Received artillery barrage during the night and took refuge among the rocks . . . from around the side of the rock I could see the hateful bearded faces of the enemy shining in the sunlight."

Dr. Gaarde is on a fellowship at the Mayo Clinic.

* * *

Dr. Russell M. Wilder and Dr. Randall G. Sprague, of the Mayo Clinic, attended the celebration of the twenty-fifth anniversary of the discovery of insulin held in Toronto under the joint auspices of the American Diabetes Association and the University of Toronto.

Dr. Wilder, who is president-elect of the American Diabetes Society, presented a paper on "Twenty-five Years of the Insulin Era," and Dr. Sprague discussed a paper by Dr. F. B. Peck entitled, "Insulin Mixtures and Modifications."

* * *

Dr. Kristofer Hagen, of Minneapolis, formerly a captain in the Army Medical Corps, with assignment in the European Theatre during the last war, left for India in September to enter the medical missionary field.

A graduate of Augsburg Theological School, Dr. Hagen is an ordained minister. Following a brief period as pastor of the Spring Lake Park Lutheran Church, he retired from the ministry and enrolled in the Medical School at the University of Minnesota, where he took his medical degree.

Dr. Hagen has been made head of the Benagaria Hospital, located 125 miles north of Calcutta and operated by the Santal Lutheran Mission.

* * *

Dr. Arthur W. Eckstein, formerly in practice at Comfrey and Mankato, and more recently a member of the staff at the Minnesota State School for feebleminded at Faribault, has entered private practice at Grand Meadow.

Dr. Eckstein, who is a native of New Ulm, studied pharmacy at the University of Minnesota for two years before going to Northwestern University, where he took his medical degree in 1912.

Mrs. Eckstein is a graduate nurse from the State Hospital at St. Peter, Class of 1912. When war was declared Mrs. Eckstein returned to nursing and served throughout the entire emergency period.

* * *

Dr. Raymond A. Rossberg, who has been resident physician at the Midway Hospital in Saint Paul since his discharge from military service in March, 1946, has entered practice at Morris in association with Dr. Frederick W. Behmler.

Dr. Rossberg graduated from the University of Minnesota in 1942 and interned at Ancker Hospital in Saint Paul. He entered the Army on July 1, 1943, and went overseas with the 306th General Hospital, but was later transferred to the 126nd General Hospital. He served in the European Theatre for twenty-seven months and when separated from service held the rank of major.

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Dr. Harold E. Coulter, University of Minnesota Medical School, 1942, has purchased the equipment of the late Dr. Henry B. Grimes in Madelia and will occupy Dr. Grimes' former offices.

Dr. Coulter is a brother of Dr. Everette B. Coulter, of Minneapolis, who practiced in Madelia several years ago. He interned at the University Hospitals in Minneapolis and the U. S. Marine Hospital in Norfolk, Virginia, prior to entering the Army Air Forces in 1943. He served as flight surgeon on the atom bomb test at Kwajalein, and was separated from the Army at Fort Sheridan, Illinois, on September 8.

* * *

Announcement has been made by Dr. Edward Bratrud, chief of staff of the Bratrud Clinic at Thief River Falls, of the appointment of Dr. Kermit Stensgaard, formerly of Fosston, to the clinic staff.

Dr. Stensgaard graduated from the University of Minnesota Medical School in 1944. Following a rotating internship at the Receiving Hospital, Detroit, Michigan, he entered the Navy and was on assignment at Great Lakes and the Seattle Naval Hospital, where he specialized in surgery.

Mrs. Stensgaard, a registered nurse and anesthetist, will be associated with St. Luke's Hospital at Thief River Falls.

* * *

Dr. Cyril P. Dargay and Dr. John B. Maunder have joined the staff of Dr. Clarence J. Henry's clinic at Milaca.

Dr. Dargay graduated from Marquette University Medical School in Milwaukee in December, 1943, and interned at St. Mary's Hospital in Duluth. A member of the 9th Infantry Medical Corps from 1944 to 1946, his service included assignments in England and on the Continent.

Dr. Maunder is a 1945 graduate from the University of Minnesota Medical School. Following completion of his internship at the Detroit Receiving Hospital in Detroit, Michigan, he was with the Oliver Clinic at Graceville before going to Milaca.

* * *

The Scientific Exhibit at the Centennial Session of the American Medical Association, which will be held at Atlantic City, June 9 to 13, 1947, will include both the history of medicine during the past century and latest developments of medical science.

Application blanks for space are now available. All applicants must fill out the regulation form. Applications will close on January 13, 1947, after which date the committee on scientific exhibit make decisions and notify applicants accordingly.

Application blanks for space should be procured as soon as possible. They are available from the director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

* * *

Although Dr. Wallace E. Belt, retired Dodge Center physician, is no longer physically able to continue his hobby of violin making, he still maintains a well-equipped workroom in the basement of his home and nothing gives him more pleasure than reminiscing over

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the violins he has completed over a period of forty-two years. Dr. Belt dates his interest in violins from the age of seven, when he heard his first violin concert. He never studied music, however, and his hobby began in 1904 when he procured a book on violin making.

In all, Dr. Belt has made 131 violins; each is numbered and bears the maker's name and address. He has sold them to violinists in all parts of the country and two members of the Chicago Women's Symphony Orchestra are now using them.

* * *

Dr. M. Dudley Hilker, formerly of Rochester, has entered the general practice of surgery and medicine in association with Dr. Phil R. Roy, in Saint Paul.

A native of Rochester, where he graduated from high school and attended junior college, Dr. Hilker took his medical degree at the University of Minnesota in 1942, after having received a B.A. in 1938, a B.S. in 1939 and a M.B. in 1941. Following the completion of his internship at St. Joseph's Hospital in Phoenix, Arizona, he was inducted into the Army Medical Corps. With the rank of captain he was assigned to the European Theatre in July, 1942, and remained there until September, 1945. In the interim, between his separation from service and entering practice in Saint Paul, Dr. Hilker was engaged in postgraduate work at the University.

* * *

Speaking at a meeting of a committee of the Minnesota State Medical Association at Fergus Falls, Dr. Willard L. Burnap, Fergus Falls, reported that a shortage of nurses has forced many hospitals to refuse the number of beds available to patients. Among these are Rochester hospitals where 100 beds are no longer in use.

Dr. William L. Patterson, superintendent of the State Hospital at Fergus Falls, stated that Federal government demands are taking both doctors and nurses from state institutions and pointed out that the Veterans Hospital at St. Cloud with 1200 patients is staffed with thirty-nine doctors and twenty interns, while the state hospital at Fergus Falls has only four doctors to care for 2000 patients, and that there are only twenty-five doctors taking care of the 10,000 patients in all Minnesota State Hospitals.

* * *

Dr. Edwin A. Kilbride and his small son, John, nine, while en route from Worthington to Rochester were injured in a collision with a drunken driver at an intersection two miles west of St. James, and both were hospitalized.

Dr. Kilbride, who was thrown against the steering wheel with such force that the wheel was all but broken off its column, suffered severe chest injuries, including fractures of the sternum and breast bone, several ribs, fracture of the left wrist and a minor injury to the right knee. His son was severely lacerated about the forehead and chin when he was dashed through the windshield and only escaped being thrown out of the car because his foot caught in the seat.

Marks on the pavement of skidding tires for about seventy feet were evidence that Dr. Kilbride was aware of the impending collision and tried to avoid it.

* * *

Dr. Curt W. Lundquist, formerly a member of the Winona Clinic, has entered practice in Owatonna and will specialize in diseases of the eye, ear, nose and throat.

Dr. Lundquist took a B.S. degree at Northwestern University in 1929, then entered the University of Minnesota Medical School and graduated in 1934. Following his internship at the Minneapolis General Hospital, he was in general practice at Hibbing for three years. From Hibbing he went to the University of Pennsylvania where he specialized in diseases of eye, ear, nose and throat for another three years. He had been a member of the staff of the Winona Clinic for a year when he was inducted into the Army Medical Corps. His assignments included service in New Guinea, and for his last fifteen months of duty he was chief of the eye, ear, nose and throat section of the Station Hospital at Jefferson Barracks, Missouri.

* * *

Dr. Milburn W. Kemp has resigned the superintendency of Moose Lake State Hospital and has entered private practice in Detroit, Michigan, where he will operate a small hospital for mental patients.

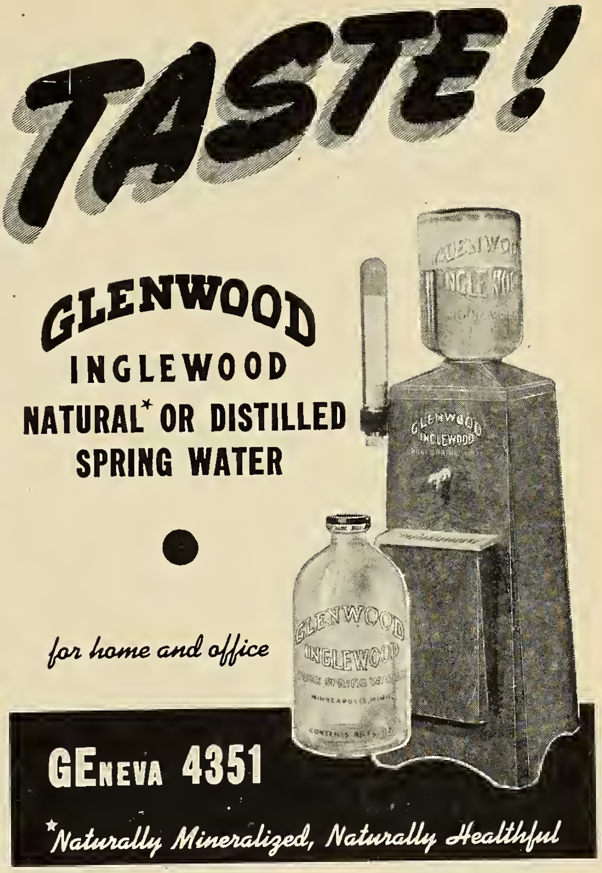
Dr. Kemp, a native of Port Dover, Ontario, was educated in Toronto. He came to the United States in 1924 and began his medical work at the State Hospital in Traverse City, Michigan. From there he went to the staff of a hospital in Newberry, Michigan, then came to the hospital at Fergus Falls, Minnesota, in 1927, where he was assistant superintendent for eight years. He was superintendent at Anoka from 1935 to 1938, when he was appointed to the position at Moose Lake.

Dr. Horton C. Hinshaw, of the Mayo Clinic, has been in New York for a meeting of the executive committee of the National Tuberculosis Association. While in the East, Dr. Kirklin addressed the Twenty-first Clinical Congress of the Connecticut State Medical Society held in New Haven.

* * *

Dr. Charles E. Proshek, Minneapolis, arrived home on October 6, from sixteen months in Europe, where he was in charge of medical care and public health activities in camps for displaced persons of the Eastern Military District with headquarters in Munich.

Dr. Proshek reports the UNRRA's effort at repatriation of the displaced is stubbornly resisted by these wanderers who are now comparatively comfortable in the camps after being pushed all over the Continent, and who fear relinquishing a certainty for something that may possibly be very inferior. But it is the children, in the doctor's opinion, who represent the great tragedy of the aftermath of the war; "homeless, orphaned children, wandering around unaccompanied, physically below par, but mentally mature, reflecting the terrible experience of the war to which they have been subjected."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Commissioned a colonel in the U. S. Public Health Service, Dr. Proshek was detailed to UNRRA. Before resuming his practice, Dr. Proshek said he intends first to get in some hunting and fishing, tune up his violin for weekly gatherings of a chamber music group, of which he is a member, and eat lots of ice cream."

* * *

Although eighty-nine, long past the time when most men retire, and confined to his home for the past eighteen months by a broken hip, Dr. George B. Weiser, pioneer New Ulm physician, is counting the days until he can return at least for a few hours out of each day to his offices which are kept in readiness for him. Dr. Weiser, a member of the staffs of Union and Loretto Hospitals, was born in Pennsylvania in 1859. He took his medical degree at Jefferson Medical College in Philadelphia in 1879 and practiced for fourteen years in his native State before coming out to Minnesota, in 1892.

In addition to his medical work, Dr. Weiser has always been active in local civic affairs. He was chairman of the County Republican Committee for many years and president of the Board of Education for thirty years. During his enforced vacation he has read incessantly and is probably better informed on latest medical developments than many a physician who is out in the thick of things. Asked in a recent interview whether, if he had it to do over again, he would choose the same career, he said with the utmost earnestness: "Yes, I certainly would. It is the fullest living a man can have and the most satisfying."

* * *

HOSPITAL NEWS

The Variety Club of the Northwest, an organization composed largely of persons engaged in the theatrical business, has presented a fund of more than $250,000 to the University of Minnesota to be used in the construction of a hospital unit devoted to heart patients and research in rheumatic fever and resultant heart disorders. The Club also pledged to contribute $25,000 annually towards support of the institution.

Dependent upon construction costs and whatever additional funds may be available, the hospital will have up to 100 beds, which are to be shared on a fifty-fifty basis by patients up to sixteen years of age and patients older than that. The Department of Pediatrics, of which Dr. Irvine McQuarrie is head, will be responsible for the younger group of patients. The older patients will be assigned to the Department of Medicine which is headed by Dr. Cecil J. Watson.

The fund was presented at a colorful ceremony at

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Coffman Memorial Union with Fred Allen as toastmaster. The speakers included Governor Edward Thye, Mayor Humphrey, of Minneapolis, Dean Harold S. Diehl, of the Medical School, and President J. L. Morrill, who accepted the check for the University.

* * *

Two nurses from Burma, Ma Koi, of Shan state, and Sein Bwint, of Kerenni state, are studying under fellowships at St. Mary's Hospital in Rochester.

Both young women served as nurses with Colonel Gordon Seagrave's division during the Burma campaign until 1943. Miss Koi then became head surgical nurse in the hospital at Lashio, and Miss Bwint took a position in a hospital at Loikaw. At Rochester they will receive general hospital training of all types. Miss Koi hopes to do some special work in surgery, while Miss Bwint's particular interest is anesthesia.

The fellowships were arranged by Dr. John Grindlay, of Rochester, who was with Colonel Seagrave and the State Department of the United States.

* * *

Dr. George H. Freeman, superintendent of the State Hospital at St. Peter, was a member of the delegation who examined the new type of building used for housing senile mental patients at Tacoma, Washington, with the view to possible duplication in Minnesota.

* * *

Miners Hospital in Crosby, which has been owned and operated by Dr. Baxter A. Smith for the past thirty years, has become the property of the Benedictine Sisters Benevolent Association. The order also operates hospitals in Brainerd, Duluth and Hibbing. Miners Hospital is to be completely renovated as soon as materials and labor can be secured.

Dr. Smith and his assistants, Dr. Lester N. Dale and Dr. J. B. Nixon, will continue to occupy their offices in the clinic building

* * *

The Board of Trustees of Northwestern Hospital, Minneapolis, entertained at dinner at the Radisson Hotel on October 9 in honor of the medical staff of the hospital, many of whom have been in military service. Dr. Walter H. Judd was the guest speaker, talking on "Legislation Affecting the Field of Medicine Past and Pending."

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Special guests included the men's advisory board of the hospital, of which Donald D. Davis is chairman, Dr. Erling S. Platou, chief of staff, and Mrs. Charles Meech, Jr., who represented the junior board.

Northwestern Hospital is one of the few in the country which is maintained exclusively by women. There is an advisory committee of men but they have no vote. Mrs. F. Peavey Heffelfinger is head of the executive board.

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SEVERAL "FLU" VIRUS FORMS

The influenza virus, an almost infinitesimally minute living particle, not only exists in several forms but these forms are quite different and individualistic, as if they were different species of animals. This is the conclusion of Dr. Jonas E. Salk, of the University of Michigan, from investigations conducted with the aid of the Commission on Influenza of the Army Surgeon General's Office.

Determination of differences between strains is essential for preparation of more effective vaccines.

Since virus particles are too small to be seen, differences can be found only in their behavior in certain physiological and chemical tests. It has been recognized for some years that there are two major types—Influenza A and Influenza B. The maladies caused by these are indistinguishable as far as overt symptoms are concerned, but their immunological reactions are quite different.

Dr. Salk's experiments show that within these two types there are highly individualistic strains. Since the "flu" viruses were first isolated, several continuous hereditary lines have been maintained at various laboratories. He tested some properties of these strains—especially a blood-agglutinating ability—under various degrees of heat. Heat tends to speed up chemical and physiological processes. Quite marked differences were found.

Like all other living things, these subcellular organisms seem bound by some fairly rigid law of heredity. Differences tend to become stabilized in families and persist.

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BOOK REVIEWS

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HYGIENE. A Textbook for College Students on Physical and Mental Health from Personal and Public Aspects. Fourth Edition. Florence L. Meredith, B.Sc., M.D. Fellow of American Medical, American Public Health and American Psychiatric Associations; Professor of Hygiene and Public Health, Tufts College. 838 pages. Illus. Price, $4.00, cloth. Philadelphia: Blakiston Co., 1946.

MEDICAL USES OF SOAP. A Symposium. Edited by Morris Fischbein, M.D. 195 pages. Illus. Price, $3.00, cloth. Philadelphia: J. B. Lippincott Co., 1946.

THE DIAGNOSIS AND TREATMENT OF BRONCHIAL ASTHMA. Leslie N. Gay, Ph.B., M.D. Assistant Professor of Medicine of Johns Hopkins University School of Medicine; Director of Allergy Clinic. Johns Hopkins Hospital; foreword by Warfield T. Longcone, A.B., M.D., Professor of Medicine of Johns Hopkins University School of Medicine; Physician-in-Chief of Johns Hopkins Hospital. 334 pages. Illus. Price, $5.00, cloth. Baltimore: Williams & Wilkins Co., 1946.

VICTORY OVER PAIN. A History of Anesthesia. Victor Robinson, M.D. 338 pages. Illus. Price, $3.50, cloth. New York: Henry Schuman, 1946.

A MEMOIR TO THE ACADEMY OF SCIENCES AT PARIS ON A NEW USE OF SULPHURIC ETHER. By W. H. G. Morton of Boston. Presented by M. Arago in the Autumn of 1847. Foreword by John F. Fulton. 24 pages. Price, $1.50, paper cover. New York: Henry Schuman, 1946.

THE CENTENNIAL OF SURGICAL ANESTHESIA. An Annotated Catalogue of Books and Pamphlets Bearing on the Early History of Surgical Anesthesia. Compiled by John F. Fulton, M.D., and Madeline E. Stanton, A.B. 102 pages. Price, $4.00, paper cover. New York: Henry Schuman, 1946.

THE CHALLENGE OF POLIO. The Crusade Against Infantile Paralysis. Roland H. Berg. Introduction by Basil O'Connor, president of the National Foundation for Infantile Paralysis, Inc. 208 pages. Price, $2.50, cloth. New York: Dial Press, 1946.

THE DIFFERENTIAL DIAGNOSIS OF JAUNDICE. Leon Schiff, Ph.D., M.D. Associate Professor of Medicine, Department of Internal Medicine, University of Cincinnati Medical School; Director, Gastric Laboratory, Cincinnati General Hospital. 313 pages. Illus. Price, $5.50, cloth. Chicago: Year Book Publishers, 1946.

MEDICAL RESEARCH. A Symposium. Edited by Austin Smith, M.D. 169 pages. Illus. Price $5.00, cloth. Philadelphia: J. B. Lippincott Co., 1946.

INTRACRANIAL COMPLICATIONS OF EAR, NOSE AND THROAT INFECTIONS. Hans Brunner, M.D. Associate Professor of Otolaryngology, University of Illinois College of Medicine, Chicago. 444 pages. Illus. Price $6.75, cloth. Chicago: Year Book Publishers, 1946.

JOURNAL OF THE HISTORY OF MEDICINE AND ALLIED SCIENCES. Anesthesia Centennial Number, October 1946, Vol. 1, No. 1. 206 pages. Illus. Price $2.50, paper cover. New York: Henry Schuman, 1946.

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INSURANCE REINSTATEMENT

The deadline established by the Insurance Act of 1946 for most veterans to take advantage of the easy reinstatement of their GI Term Insurance is February 1, 1947, six months after passage of the Act, according to a folder entitled "GI Insurance Streamlined," published by the Illinois Commercial Men's Association.

In the Insurance Act of 1946 passed in its closing sessions, Congress met every major reason why many veterans dropped their National Service Life Insurance after leaving the service. These changes and an explanation of how to get the most out of GI insurance are described fully and clearly in the folder, "GI Insurance." The folder, published primarily for veteran members of the Illinois Commercial Men's Association, is available free to other interested veterans. Veterans desiring free copies should send a request to R. A. Cavenaugh, c/o of I.C.M.A., 332 S. Michigan Avenue, Chicago 90, Illinois.

Major reasons for dropping GI insurance have been lack of lump sum payment to beneficiaries, restriction of beneficiaries to members of immediate family and omission of endowment plans among permanent plans offered. All these, important to civilian needs of veterans, have now been changed. Congress added a disability income provision to pay $50 a month insurance income in case of total disability occurring at any time before the age of sixty.—Communication issued by Illinois Commercial Men's Association.

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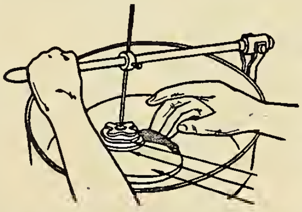

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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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Minnesota Medicine

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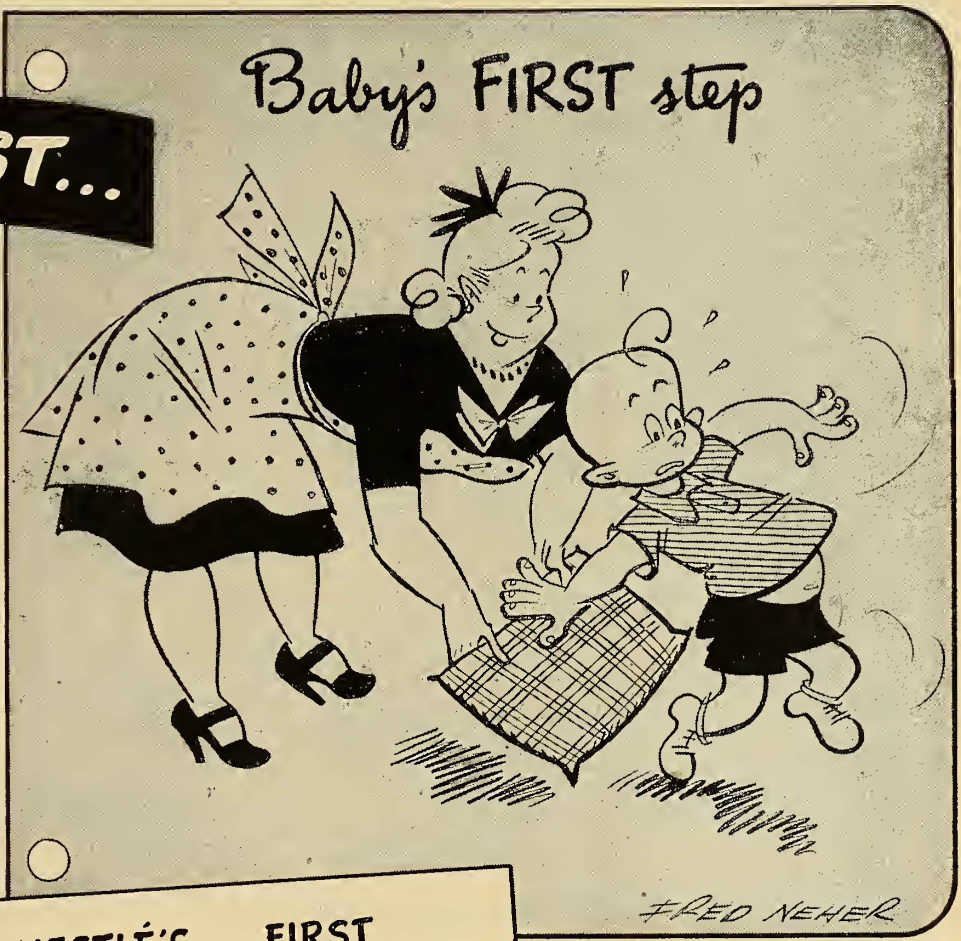
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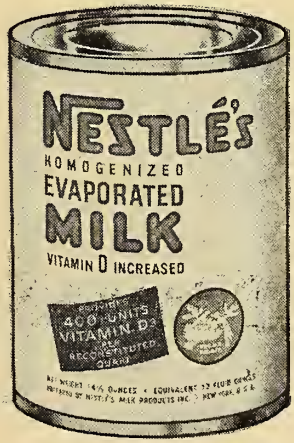
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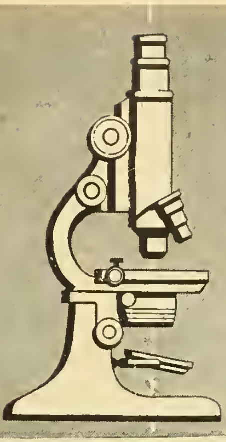

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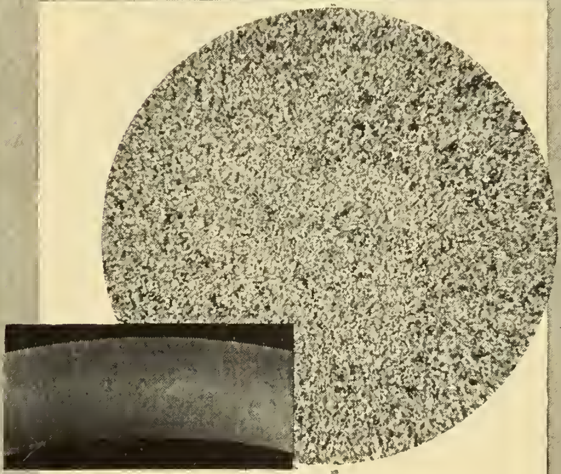

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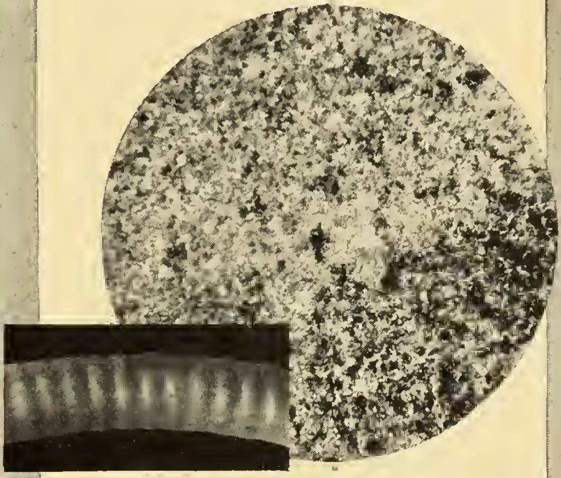

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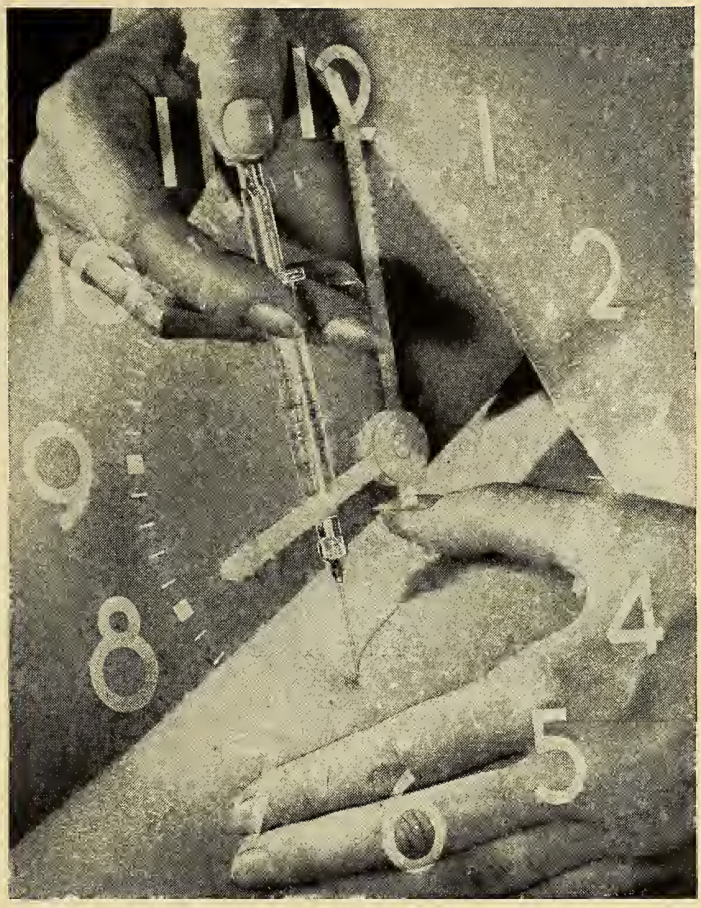

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Richards, R. K., and Perlstein, M. A. (1945), Tridione, a New Experimental Drug for the Treatment of Convulsive and Related Disorders, Proc. Chicago Neurological Soc., Jan. 9; and (1946), Arch. Neurol. and Psychiatry, 55:164, February.

Lennox, W. G. (1945), Petit Mal Epilepsies: Their Treatment with Tridione, J. Amer. Med. Assn., 129:1069, December 15.

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Erickson, T. C., Masten, M. G., and Gilson, W. E. (1946), Observations on the Use of Tridione in the Treatment of Epilepsy, Presented before Amer. Neurological Soc., San Francisco, June.

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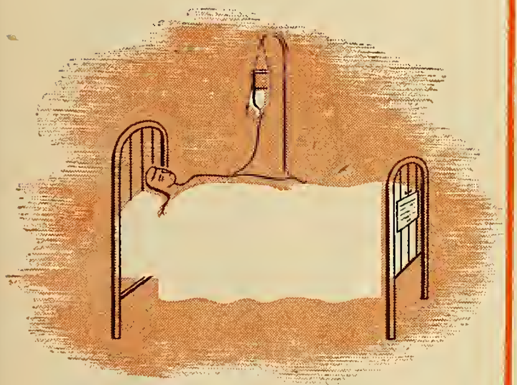

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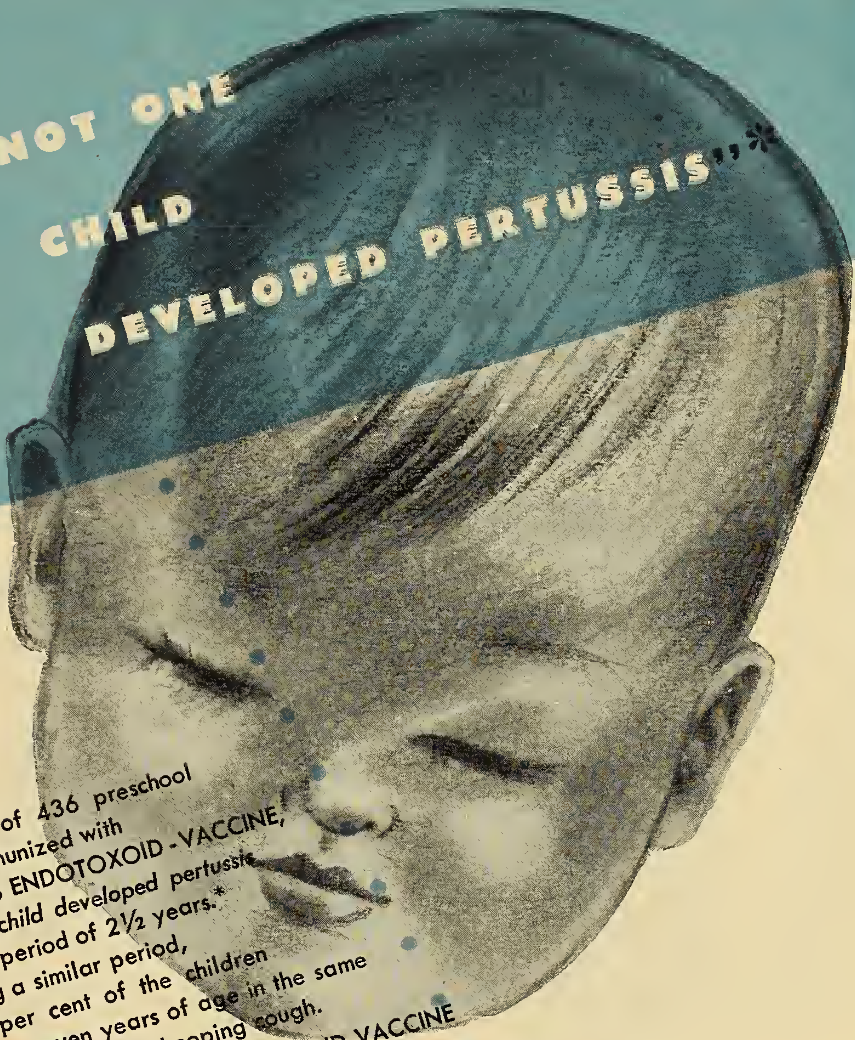

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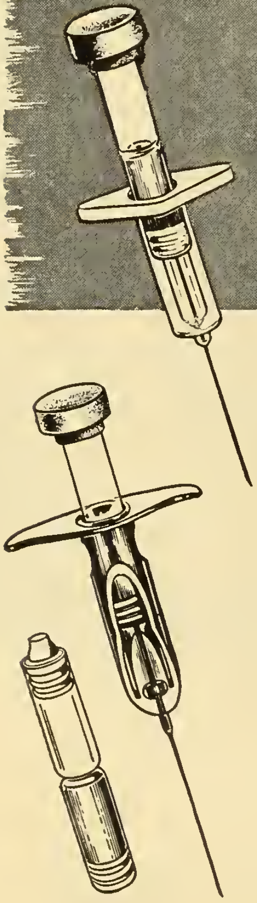

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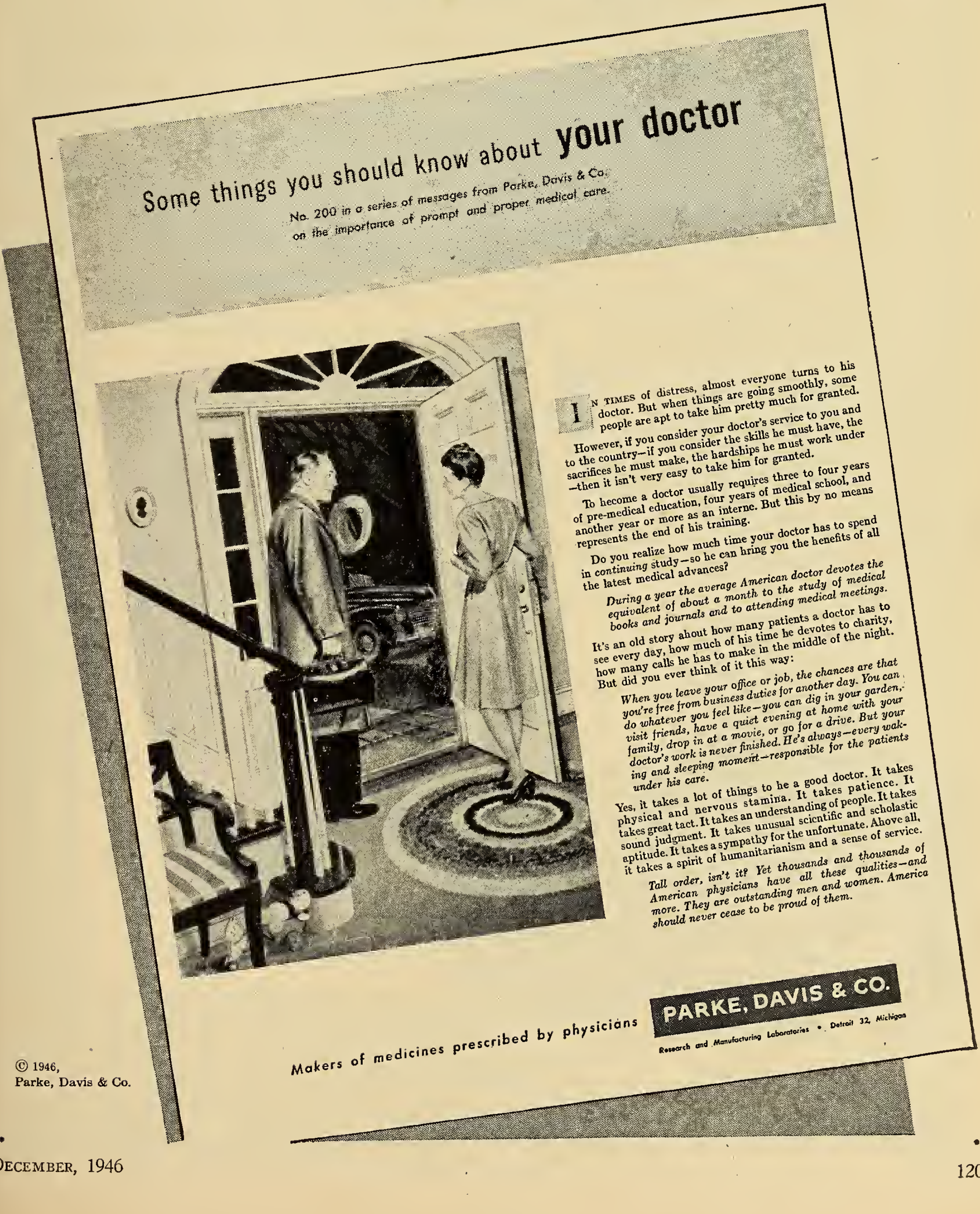

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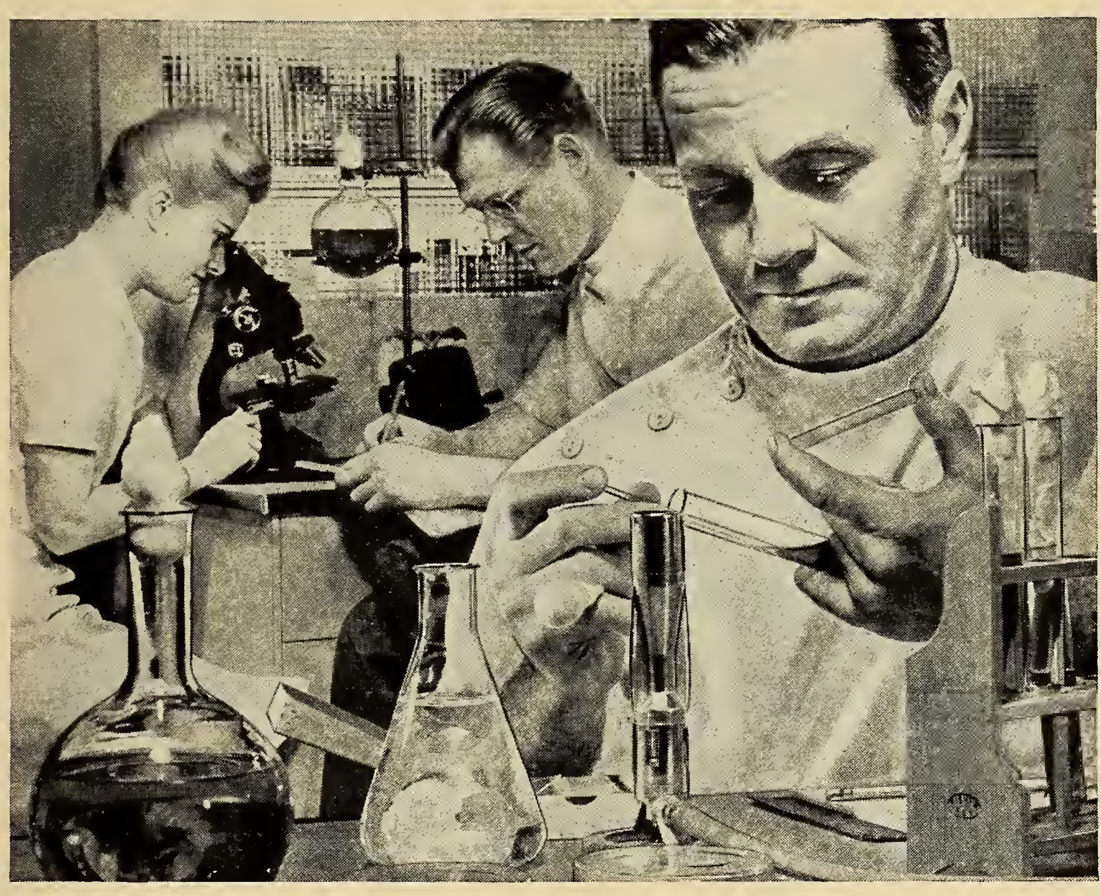

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 December, 1946 No. 12

REACTIONS FOLLOWING BLOOD PLASMA TRANSFUSIONS

Their Control and Prevention

W. D. STOVALL, M.D.
Director, Wisconsin State Laboratory of Hygiene
Madison, Wisconsin

INTRAVENOUS therapy has grown in usefulness since the introduction of salvarsan in the early part of this century. In the beginning, reactions followed this method of treatment with a frequency which caused considerable concern. The causes of these disturbing reactions were not understood, and consequently the methods of administration and the paraphernalia used were diligently scrutinized, but the separation of the types of reactions was not clearly determined. A chill followed by a rise in temperature was attributed to the same causes whether the intravenous fluid was glucose solution or blood.

Today the types of reactions are recognized and are divided into three major varieties, pyrogenic, allergic and hemolytic.

In 1925, Seibert[4] described the role of autolytic products of a variety of bacteria found in distilled water in the production of chill and an elevation of temperature sometimes as high as 105° to 106°. Because these bacteria are widely distributed in nature, extreme care is necessary to free the water used in the preparation of intravenous fluids from them. And also because a small quantity of their toxin is sufficient to produce mild reactions, chills and fever up to 101° and 102°, the greatest care is necessary to protect the rubber tubing, the glassware, and even the syringes used in the administration of these fluids, from contamination with pyrogenic bacteria. The accomplishment of this is made more difficult because of the resistence of the toxin to heat. Hort and Penfold[2] have shown that the toxin is not destroyed by the usual methods of boiling in instrument sterilizers or by autoclaving.

Even though many hospitals use pyrogen-free intravenous fluids prepared by pharmaceutical companies, this type of reaction is still the cause of a not inconsiderable number of these reactions, and if the therapy is transfusion of blood it is often referred to by the physician as "transfusion reaction." This type of reaction continues because precautions used in the preparation of syringes, flasks and rubber tubing are not adequate to protect them from pyrogenic contamination. We have solved this part of the problem by collecting distilled water in a large 35-gallon tank and by maintaining the water at boiling temperature, twenty-four hours a day, continuously.

Bourn and Seibert[1] recognized the resistance of this toxin to heat, and found as early as 1925 that it could be destroyed by boiling temperature maintained over a four- or five-hour period. We have utilized this information in the manner described above, and frequent tests on rabbits have shown that the tank water is free from pyrogen toxin. This was accomplished by placing a steam coil through the bottom of the tank and passing steam through it continuously to maintain a boiling temperature day and night, week in and week out. However, this alone was not sufficient to prevent an occasional mild reaction. It was necessary to clean all rubber tubing thoroughly by boiling it in 0.1 per cent sodium carbonate solution, rinsing in pyrogen free water, blowing it dry by attaching it

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Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 22, 1946.

to the compressed air jet, and after it was thoroughly dry, assembling it for use, wrapping, and immediately sterilizing it in the autoclave. If glassware and syringes used on the floor are not treated with the same precautions, mild reactions may occur. We have found these precautions necessary to prevent reactions of this nature following transfusions as well as other intravenous fluids.

Allergic reactions are of a different nature. They occur because of an antibody-antigen reaction, following the use of blood from donors who have recently eaten food to which the allergic patient is sensitive, or the use of blood from donors who are themselves sensitive to various allergens. In the latter case, the recipient is passively sensitized to the allergens to which the donor is sensitive.

A recent case in one of the wards in the Wisconsin General Hospital is an instance of this type of reaction. A man fifty years of age required a transfusion in a long course of illness due to a hemolytic streptococcus infection. A friend, of the proper group, who was found to be suitable by a cross-matching test, was secured as the donor. He was carefully instructed to refrain from taking food of any kind for four hours. At the end of this period he was bled and the transfusion carried out immediately As the last of the 500 c.c. transfusion was going into the vein, the patient complained of the premonitary symptoms of asthma. He soon became dyspneic, deeply cyanotic, had involuntary urination and defecation, and for several hours his condition was the cause of great concern. Inquiry following his recovery disclosed that the donor denied eating anything but said he did visit a nearby restaurant and drank four cups of coffee just prior to being bled. The patient gave a history of being highly sensitive to coffee, so sensitive that he had not been able to drink it without precipitating an attack of asthma.

This type of reaction can be greatly reduced by instructing the donor to refrain from eating or drinking anything other than water for three to four hours prior to contributing blood, and by rejecting donors in whom there is any history of allergy.

The hemolytic reaction is the most dangerous of the three varieties of reactions. They occur occasionally in spite of careful laboratory testing and in many instances are unavoidable with the commonly used laboratory methods for testing donor-recipient compatibility.

Following the discovery of intra-species difference of blood by Landsteiner and the determination of four distinct human blood groups based upon two antigenic factors, A and B, the transfusion of whole blood has taken a prominent place in therapy. This method of treatment has grown rapidly due to a widespread understanding that proper and safe donor recipient blood compatibility can be established by blood group determinations. However, experience has shown that there are a not inconsiderable number of people who, though belonging to the same major blood group, cannot be placed in the relation of donor and recipient without serious and sometimes fatal consequences to the recipient. To obviate this paradox or inconsistency, cross-matching blood from the prospective donor and recipient has been introduced in order to detect intra-group incompatibility and to prevent hemolytic reactions.

This double testing of the blood of individuals of the same major groups has reduced markedly the number of hemolytic reactions following blood transfusions, but it has not been successful in completely eliminating them, as is known to the discomfort and alarm of all physicians. A mild hemolytic reaction not only affects the welfare of the patient but often seriously interferes with this most effective form of therapy.

Knowledge of the intra-group incompatibility of human blood has been growing steadily for many years. The individual property of each human blood was shown by Landsteiner and Levine in the discovery of three substances, M, N, and P, which account for the specific serological differences in the erythrocytes of individuals belonging to the same major groups. These differences are unrelated, however, to the major groups which are determined by the two substances, A and B.

The complexity of individual differences in human blood has recently been multiplied many times by the finding of a new erythrocytic substance, Rh. It is not the purpose of this paper to review the work of Landsteiner in the discovery of this factor nor to repeat what has now been so often repeated in the medical literature concerning the observations and reports of Drs. Levine and Weiner[3,5] and their associates concerning erythroblastosis. It is intended here to emphasize the specific serological differences existing in human blood cells which contribute to sometimes mild and at other times severe hemolytic reactions.

When all of the combinations of the major groups A 1, A 2, A 1 B, and A 2 B, and the four types, M, N, Mn, and P, are considered, and when these groups and types are multiplied by the eight Rh types, it is found that there exist 288 serological varieties of human blood cells. The fact that these varieties vary in the frequency with which they are encountered, and that some of them are extremely rare, accounts for the large percentage of compatible bloods which are determined by the relatively simple laboratory tests which are now available. However, a large variety of blood types known to exist cannot be recognized by the usual laboratory tests, and when the probability that there are others that are unknown is considered, the occurrence of occasional unexpected and unavoidable hemolytic reaction is not surprising. The incidence of hemolytic reactions cannot be estimated from the literature since only the severe ones are reported and not always these. The mild ones are much more common than they are thought to be since they are rarely studied thoroughly. They often explain the poor response in the rise of erythrocytes and hemoglobin following multiple blood transfusions. In our own experience a reaction of varying degrees of severity occurs in 1 per cent of the transfusions, even when all known precautions are taken.

Again, hemolytic reactions, the result of incompatible blood, occur not only following transfusion but also in cases of Rh positive babies who have become passively hypersensitive to their own erythrocytic type because of antibodies derived from an Rh negative or sometimes an Rh positive mother.

Control and Prevention of Hemolytic Reactions

1. Adequate laboratory facilities and materials for the determination of blood compatibility between donor and patient are essential.

Deterination of Rh factor as well as the major blood group of all girl babies, young women, and all other women who are in their child-bearing period is advisable. The transfusion of any of the Rh negative in this group with Rh positive blood may create a sensitivity which might prevent them from having children.

When repeated transfusions are necessary for either male or female patients, the red cells of the patient should be tested for the Rh factor. It is advisable to avoid the use of Rh positive donor blood on such Rh negative cases since some of them will develop a sensitivity to Rh positive blood.

2. All pregnant women who give a history of icterus in previous babies or other suggestions of erythroblastosis should be tested for the Rh factor, and, if negative, their husbands should also be tested.

Mothers who have previously had icteric babies or erythroblastic babies should be watched during the latter part of their pregnancy for the development of agglutinins for the Rh factor, and if they should develop them an erythroblastic baby may be expected, and the physician should be prepared to combat this condition when it arises.

3. Any icteric baby, either icteric at birth or beginning a few days or weeks after birth, should be transfused with Rh negative blood of the proper group, or type O Rh negative blood. The blood of the mother or father cannot be used in such cases. If no proper group or Rh negative cells are available, the mother's cells may be used if they are separated from the plasma, washed several times in normal saline solution and resuspended in normal saline for injection into the child.

Before any patient is transfused with whole blood, the possibility of previous transfusions should be ascertained, and those giving a history indicating this possibility should be tested for Rh. If they are Rh negative, then Rh negative blood is the better procedure.

4. The antigenic complexity of red blood cells makes apparent the laboratory difficulty in determining compatible bloods and warns against the use of whole blood unless adequate laboratory facilities are available to give the patient the maximum protection available.

Satisfactory typing-serum for the determination of the various Rh factors and Hr is not available, and satisfactory standard diagnostic typing-serum is difficult or impossible to obtain in sufficient quantities for all. It would appear advisable for some agency in each state to develop the production of this serum from mothers who have previously had erythroblastic babies, and make this serum available for distribution to all hospitals within the state.

5. Since severe reactions of the intra-group type

(Continued on Page 1229)

THE CYTOLOGY OF THE ERYTHROGENIC RETICULUM OF THE BONE MARROW IN PERNICIOUS ANEMIA BEFORE AND AFTER ADMINISTERING FOLIC ACID

GEORGE FAHR, M.D., and A. E. WALCH, M.D.

Minneapolis, Minnesota

IT is our opinion that the erythrogenic reticulum of the bone marrow in Addison Biermer's disease (pernicious anemia) during relapse is distinctive and the most reliable morphological criterion of this disease, as shown by Schleicher.[2] We are also convinced that the morphology of the bone marrow in Addison-Biermer's disease during early remission is also characteristic and gradually approaches the morphology of the normal bone marrow. The Minneapolis General Hospital has bone marrow studies on 120 confirmed cases of pernicious anemia which have been studied before and during specific therapy with liver extract, raw liver juice, and ventriculin. We therefore possess a rigid morphological standard on which to judge the results of treatment of pernicious anemia. Spies[3] and Moore[1] have recently studied the effects of folic acid in pernicious anemia. Neither of these investigators has shown illustrations of the changes in the reticulum that take place under the influence of folic acid, although both these papers show results which indicate that it possesses definite antipernicious anemia activity. We have studied the effect of folic acid (Folvite*) upon the reticulum of the bone marrow in two cases, and the results are

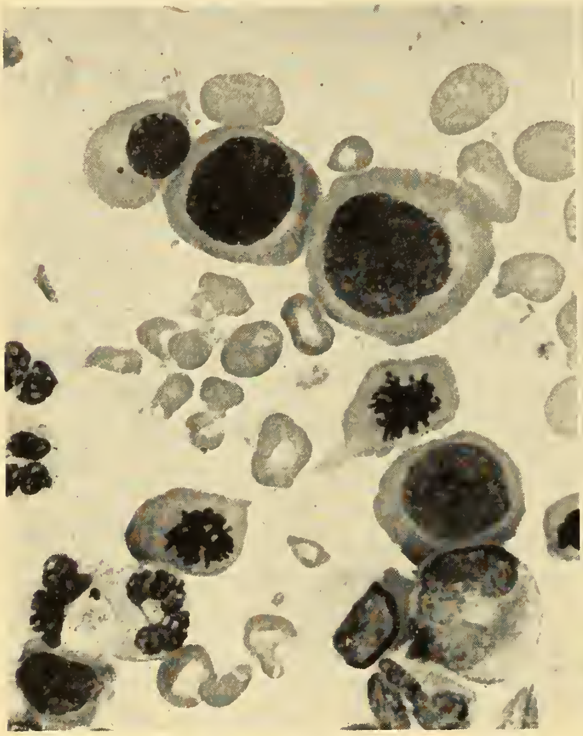


Fig. 1. Pernicious anemia (Addison-Biermer's disease). Imprint of sternal marrow unit of H.B. before treatment with folic acid. Promegaloblast (upper right); basophilic and polychromatic megaloblast (upper left); promegaloblast in mitosis (telephase); basophilic megaloblast, orthochromatic normoblast-like megaloblast and giant metamyelocyte (lower right).

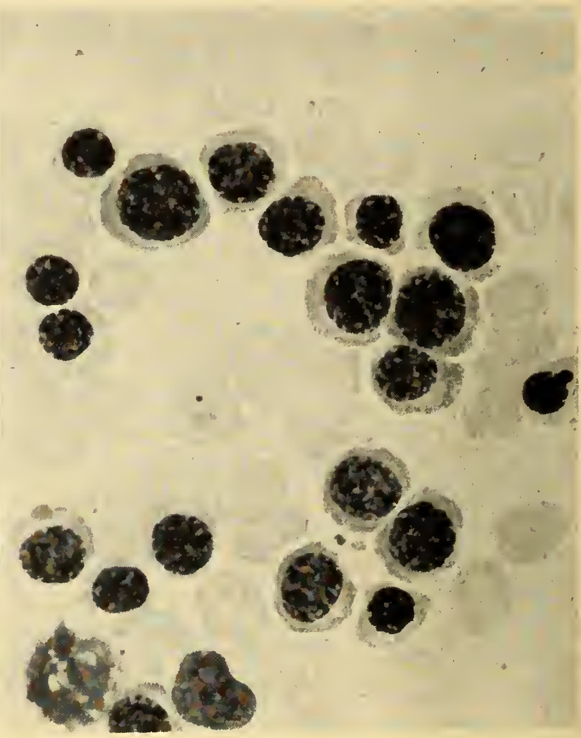


Fig. 2. Pernicious anemia (Addison-Biermer's disease). Imprint of sternal marrow unit of H.B. at peak of reticulocytosis, nine days after folic acid treatment was begun. Normoblasts of various maturation stages. No promegaloblasts or megaloblasts observed.

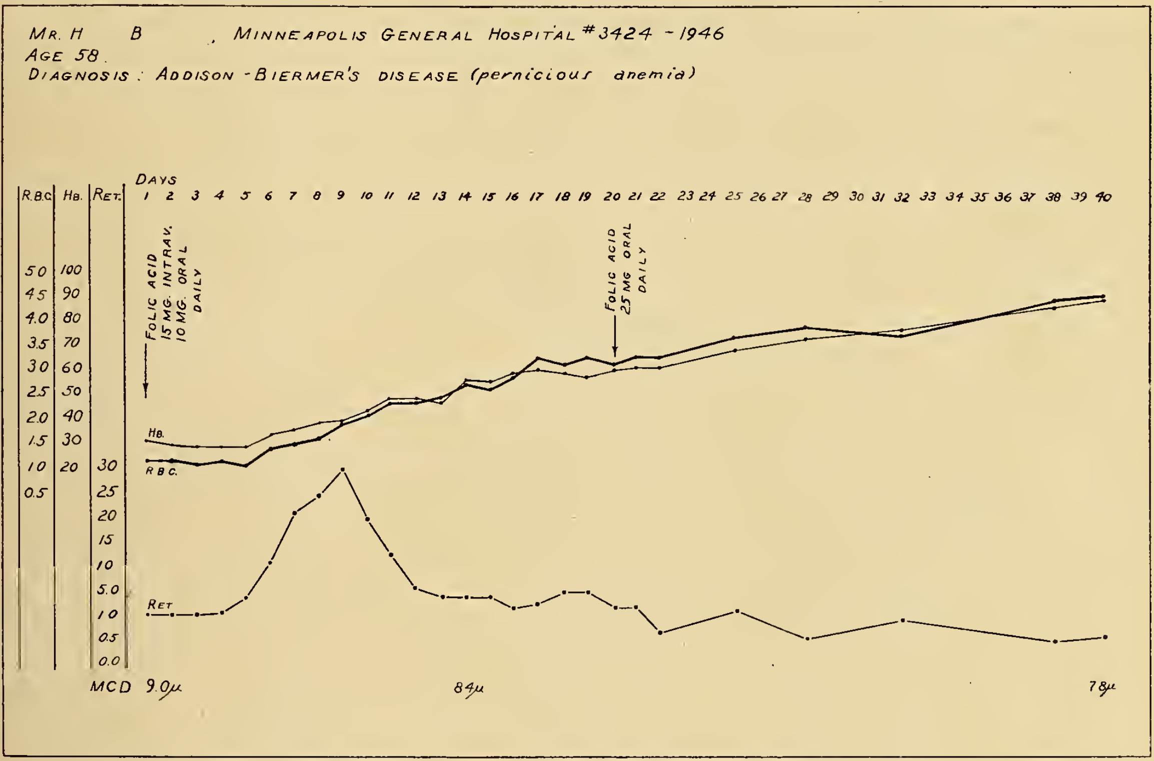
From the Department of Medicine, University of Minnesota and the Minneapolis General Hospital.

The daily blood studies were done by Fern Wagner, Department of Hematology.

The photomicrographs were made by H. W. Morris, Medical Photographer, University of Minnesota.

*Folvite tablets 5 mg. and Folvite ampoules 15 mg. were supplied by Lederle.

so definite that we desire at this time to present the data with illustrations as a preliminary report, indicating that a most efficient antipernicious anemia chemical has been synthesized and made available for the treatment of this disease.



GRAPH 1.

Case Reports

Case 1.—Mr. H. B., of German descent, was admitted to the Minneapolis General Hospital on May 1, 1946, complaining of weakness, anorexia and numbness of legs and hands. He had considerable difficulty in walking, and fell frequently. During the previous six to twelve months he had noted soreness of the mouth and weight loss. Two years before his present admission he had been treated for pernicious anemia. Following this initial period his treatment had been very inadequate and he had received liver at infrequent intervals.

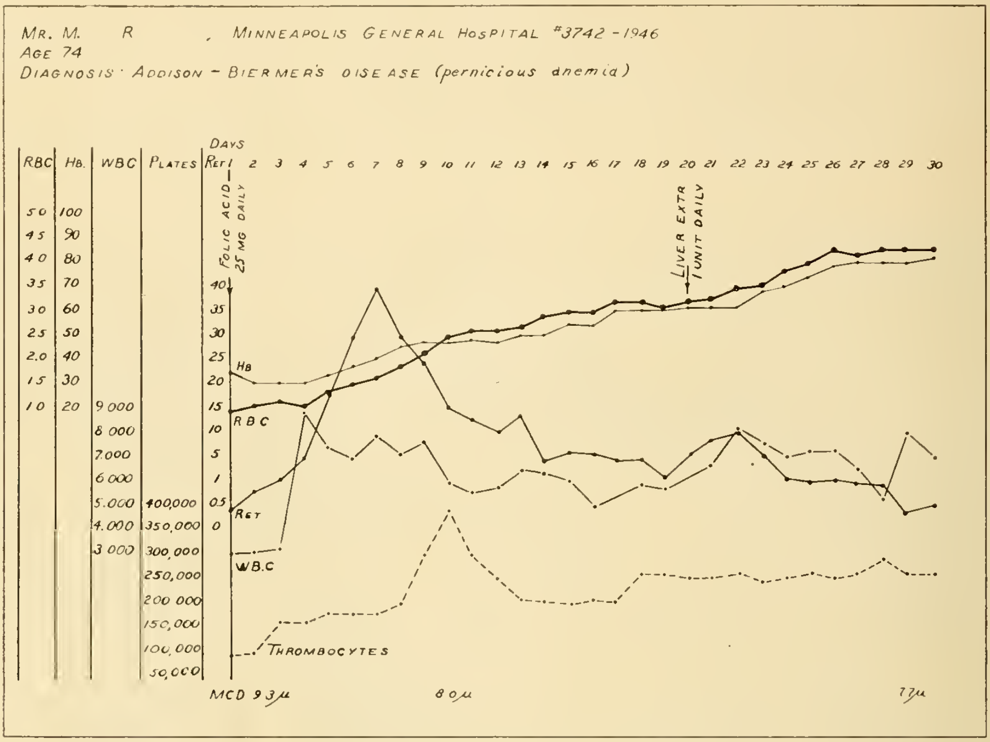
Examinations revealed a well developed man of medium stature with lemon yellow coloration of the skin. He was confused, could not walk without assistance and was very uncoöperative. His tongue was smooth, slightly red, with marked atrophy of the lingual papillae. Blood pressure was 158/60, heart and lungs were normal except for a systolic murmur at the apex. Liver and spleen were normal. He presented the typical findings of subacute combined degeneration of the spinal cord.

Laboratory studies revealed negative serology. Gastric contents contained no hydrochloric acid after histamine. The blood showed: hemoglobin 32 per cent, erythrocytes 1,230,000, leukocytes 2,700 with neutrophils 43 per cent, lymphocytes 50 per cent, monocytes 5 per cent, basophils 2 per cent, reticulocytes 1.5 per cent, mean cell diameter 9 microns. Morphology was characteristic of pernicious anemia. The urine was normal. The icterus index was 9; plasma proteins were 6.2 mg. per cent.

Folvite (synthetic folic acid), 10 mg. intravenously and 15 mg. orally, was given daily beginning on May 4, 1946, for twenty days. At this point the intravenous folic acid was discontinued, and 25 mg. were given orally for another twenty days. The blood pattern is shown in the accompanying graph.

Five days after the onset of folic acid therapy, the patient stated he felt better, his appetite increased, he appeared less confused and he was much more coöperative. On the eighth day after instituting therapy he was able to dress himself and could walk about the ward. His walking improved on the twentieth day; his gait was less spastic and he could get along without the attention of the nurse. His improvement was gradual during the remainder of the hospital course, but on discharge, June 13, 1946, he still had some of the findings of subacute degeneration. His blood response is shown in Graph 1.

Case 2.—Mr. M. R., a seventy-four-year-old patient of Scotch descent was admitted to the Minneapolis General Hospital on May 14, 1946, complaining of weakness, dyspnea and attacks of syncope. He had been under treatment for pernicious anemia for fifteen years but had received only small amounts of liver during the previous year because he had become allergic to liver extract.



GRAPH II.

On admission he was slightly icteric and pale. His tongue was typically smooth with atrophic papillae. Blood pressure was 96/56, heart and lungs normal except for a soft, blowing, systolic murmur. Neurologic findings were typical of subacute combined degeneration of the spinal cord.

Laboratory studies revealed negative serology, hemoglobin 34 per cent (Sahli), erythrocytes 1,000,000, leukocytes 3,100, with neutrophils 41 per cent, lymphocytes 56 per cent, monocytes 3 per cent, reticulocytes 0.4 per cent, thrombocytes 98,000, and a mean cell diameter of 9.3 microns. Cell morphology was characteristic of pernicious anemia. The urine was normal. The icterus index was 17; plasma proteins were normal. Gastric contents failed to reveal free hydrochloric acid after histamine.

Folic acid, 10 mg. intravenously and 15 mg. orally, was started on May 15, 1946, and continued daily for twenty days. Five days after the onset of therapy, his appetite was markedly improved and he felt stronger. Dizziness also was diminished. The patient had been incontinent on admission, but two weeks after instituting therapy, continence of urine was re-established. Improvement was gradual. On the twentieth day folic acid therapy was discontinued and liver extract was used. The blood response is shown in Graph 2.

Conclusions

Synethetic folic acid (Folvite) produces exactly the same bone marrow response in pernicious anemia (Addison-Biermer's disease) and with the same rapidity as the most potent liver extracts.

It can be used to bring about remission in cases of pernicious anemia that have become allergic to liver extract.

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PENICILLIN

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THERE have been many achievements in the practice of medicine during the last few years, so many in fact that it is impossible for any individual to keep abreast of them all. Probably the outstanding achievement has been the application and use of the antibiotics to the treatment of bacterial infections. It is strange that although the antibiotics had been known for many years, it remained for them to be rediscovered by Dr. Fleming in 1929. It is stranger still that almost another ten years had to elapse before there was a critical clinical application of the antibiotic information by Doctors Florey and Florey. With the advent of the war, impetus was given to all forms of clinical research, and the Rockefeller Foundation then brought to this country those investigators who were interested in antibiotic research, particularly those interested in penicillin. When they arrived here, they were placed in contact with certain government agencies, as well as certain private industries, so that within a few months what had been a laboratory curiosity in the treatment of bacterial infection became a practical reality, and penicillin was made available not only to the armed forces but also, to some extent, for civilian use.

The material, penicillin, is formed by the growth of the mould *penicillin notatum*. This particular mould may grow upon the surface of its liquor, it may grow submerged in materials or it may grow in various grains or other substances, but regardless of the method by which the *penicillin notatum* is grown, there results, as a by-product of its growth, the substance penicillin. When this particular material is removed from the substance upon which it is grown, it is a yellow powder, and this powder is packaged into vials containing 100,000 units each of the drug. These vials are marketed with a diluent, either water or oil. The dose of penicillin is measured in the terms of units, and a unit represents the amount of the drug that is required to inhibit the growth of a certain standard strain of staphylococcic organisms. This unit, which has been called the Oxford unit, is the English unit system, and is the one that is also used in this country.

At this time the action of penicillin remains unknown. We do not know whether it is antibacterial, bactericidal, or simply inhibits the growth of bacteria, thus enabling the ordinary defense processes of the body to destroy the remaining organisms. The consensus seems to be that penicillin performs its duty by inhibiting bacterial growth. The drug, like all other drugs, in order to be effective, has to be administered in proper dosage and it has to be administered by proper method. In order to administer penicillin one must consider: (1) is use of the drug indicated; (2) are there any contraindications to its use; (3) what dosage is needed; (4) how shall the drug be administered, and (5) are there any toxic reactions from its use?

It may be said that penicillin like any other drug, has very definite, specific indications. It is indicated unequivocally in all streptococcic infections with or without bacteremia. It is indicated in all clostridial infections, as well as in all staphylococcic infections, both those with bacteremia and those without. It is indicated in all anaerobic streptococcic infections, as well as in all Neisserian and pneumococcic infections. In some conditions, such as syphilis, actinomycosis and diphtheria, penicillin appears effective, but the ultimate value of the use of the drug in these instances still remains unknown. The effect of the drug in the treatment of peritonitis, liver abscess, and certain types of urinary tract infections is still a matter of controversy. On the other hand, among the actual contraindications for the use of the drug are those wherein we have Gram-negative bacillary infections as well as many other types of infectious disease. The accompanying outline, which has been taken from an article by Dr. Albrecht, summarizes very well the indications and the contraindications for the use of penicillin.

There are, as far as I know, no absolute contraindications for the use of penicillin *per se*, and penicillin may be used in conjunction with any other form of treatment.

When the drug is to be used, it must be used in the proper dosage, and at this time we believe that this should be not less than 100,000 units in twenty-four hours. To use less of the drug may produce resistance in the organism to the penicil-

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Dr. Briggs is a clinical instructor in medicine at the University of Minnesota. Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 21, 1946.

lin, thus adding a strain to the already increasing number of organisms that are not affected by the ordinary dosages of penicillin.

The drug may be administered orally, but when it is so administered, it must be given in buffered media to overcome the action of the gastric juice upon the penicillin. The oral dosage must be in excess of that required by other methods of administration, and 200,000 to 300,000 units must be given per day. It seems obvious that this is a very expensive and rather wasteful means of administering penicillin.

The topical application of penicillin may be in the form of either direct application of the powder by ointment, by creams or in the form of packs. The dosage applied locally has not been accurately established. When applied in packs, the penicillin is dissolved in water or saline, and cotton or gauze soaked in the solution is applied directly to the affected area.

Penicillin at times may be given by inhalation. When so administered, some 25,000 units are dissolved in 1 or 2 c. c. of the diluent and sprayed directly into the respiratory passages or administered through an aerosol apparatus. The drug may be intrabronchially directed into the bronchus by application through a catheter in the bronchus, by bronchoscope installation or by constant aerosol inhalation.

In abscess cavities and other areas of accumulated pus, the drug may be directly instilled into the abscess cavity. This is the method used in the treatment of an empyema cavity, as well as in abscess cavities in the brain and elsewhere, When one applies the drug directly to an abscess cavity the dose of the drug is usually increased to about 40,000 or 50,000 units in the diluent material, and approximately 20 to 30 c.c. of the solution is placed in the cavity.

In some parts of the body penicillin fails to penetrate sufficiently when given parenterally or orally, and in these instances in order to obtain an effective dose, one must give the drug locally.

In meningitis, penicillin is not only given parenterally but it is also injected intrathecally, usually twice a day with the intrathecal dose varying from 20,000 to 40,000 units.

Ordinarily, penicillin is best given parenterally, either intravenously, subcutaneously or intramuscularly, either constantly or in periodic injections every two or three hours. When necessary, the drug, of course, can be given by a constant drip method, but ordinarily the intermittent use of the drug seems to be the best. The subcutaneous method, however, is usually painful, and the intravenous administration of the drug is inconvenient and sometimes painful. The method of choice is to give the drug intramuscularly in the gluteal region. We may attempt to slow the absorption of the drug by placing ice over the area to be injected, by injecting the drug in conjunction with adrenalin or by combining the dose of the drug with oil, thus decreasing the rate of absorption.

When oil is used, larger doses of the drug are given at longer intervals. Pain at the sight of the injection may be decreased also by placing ice over the site to be injected, and also by using novocaine in conjunction with the injection. Since the drug disappears from the blood stream rather rapidly it is essential that 12,500 units be given at least every three to four hours. This method maintains a constant therapeutic effective dose. In conjunction with the parenteral use of the drug, one may also use the drug locally.

When the patient receiving penicillin fails to respond to the use of the drug, we must attempt to determine the reason. It is possible that the failure has occurred because there was no indication for its use, or that the organism was penicillin insensitive or resistive. The dosage may have been inadequate or not maintained over a long enough period. It may have failed if proper surgical drainage of an abscess cavity had not been attained. Lastly, the failure may have been the result of an overwhelming infection, an infection so great that the body could not overcome the effects of the bacteria even though there was bacterial inhibition by the penicillin.

There are very few toxic reactions from the use of penicillin. There may be some pain at the site of the injection; fever may result from pyrogens present in the material; allergic disturbances may occur such as a delayed serum type of reaction, urticaria and other anaphylactic manifestations. At times dermatitis may result, and occasionally abdominal pain is associated with the use of penicillin. All these, however, are amenable to prophylactic care, to benadryl and to other symptomatic treatment.

In summary, penicillin is the material derived from the growth of the mould *penicillin notatum.* It is a powder whose strength is measured in units, and the dose of the drug ordinarily should not be less than 100,000 units every twenty-four hours; this should be given in divided dosages, preferably intramuscularly, with a minimum of

12,500 units every three hours. If necessary, the drug may also be given locally, orally or instilled into various abscess cavities. It may be administered in conjunction with any other known form of therapy, and the parenteral use of the drug does not contraindicate its local use. The indications as well as the contraindications for the use of the drug can be found in the annexed tables. There are no specific contraindications *per se* to the use of penicillin.

Penicillin when used properly is an excellent drug in our armamentarium for the treatment of bacterial infections. In spite of the great efficacy of penicillin, however, it does not replace a well-taken history and well-made physical examination, and it does not replace laboratory investigations. In spite of the great aid we receive from penicillin, it is still not a substitute for, nor should it replace, well-established, sound, medical and surgical principles.

Conditions for Which Penicillin Is the Best Therapeutic Agent Available*

1. All staphylococcic infections with and without bacteremia:
    - Acute and chronic osteomyelitis.
    - Carbuncles-soft tissue abscesses.
    - Meningitis.
    - Cavernous and lateral sinus thrombosis.
    - Pneumonia-empyema.
    - Carbuncle of kidney.
    - Wound infections—burns.
    - Endocarditis.
2. All cases of clostridia infections:
    - Gas gangrene.
    - Malignant edema.
3. All hemolytic streptococcic infections with bacteremia and all serious local infections:
    - Cellulitis.
    - Mastoiditis with intracranial complications, i.e., meningitis, sinus thrombosis, et cetera.
    - Pneumonia and empyema.
    - Puerperal sepsis.
    - Peritonitis.
    - Endocarditis.
4. All anaerobic streptococcic infections:
    - Puerperal sepsis.
    - Localized infections elsewhere.
5. All pneumococcic infections of:
    - Meninges.
    - Pleura.
    - Endocardium.
    - All cases of sulfonamide-resistant pneumococcic pneumonia.
6. All gonococcic infections.
7. All cases of anthrax.
8. All cases of chronic pulmonary suppuration in which surgical treatment is contemplated.
9. All meningococcic infections failing to respond to sulfonamides.
10. All cases of bacterial endocarditis due to susceptible organisms.
11. Erysipeloid (swine erysipelas).
12. Vincent's infection.
13. Prophylactic use in prevention of possible secondary infection following tonsillectomy and tooth extraction in cases with a history of rheumatic fever or in rheumatic heart disease, in congenital heart disease and in other conditions in which secondary infection may occur (infected teeth; tonsil).

Conditions for Which Penicillin Is Effective But Its Position Is Not Clearly Defined

Penicillin, while effective in the treatment for the following diseases, will require additional experimental work before its position is clearly defined.

1. Syphilis.
2. Actinomycosis
3. Diphtheria, in conjunction with antitoxin.

Conditions for Which Penicillin Is of Questionable Value

Penicillin is of questionable value in mixed infections of the peritoneum and liver in which the predominating organism is of the Gram-negative flora, i.e.:

1. Ruptured appendix with peritonitis.
2. Liver abscess.
3. Urinary tract infections due to Escherichia coli.
4. It is also of questionable value in rat bite fever due to Streptobacillus moniliformis.

Conditions for Which Penicillin Is Contraindicated

Penicillin is ineffective for the following:

1. All Gram-negative bacillary infections:
    - Typhoid-paratyphoid
    - Dysentery
    - Escherichia coli
    - Hemophilus influenzae
    - Bacillus proteus
    - Bacillus pyocyaneus
    - Brucella melitensis
    - Pasteurella tularensis
    - Friedlander's bacillus
2. Tuberculosis.
3. Toxoplasmosis.
4. Histoplasmosis.
5. Acute rheumatic fever.
6. Lupus erythematosis, diffuse.
7. Infectious mononucleosis.
8. Pemphigus.
9. Hodgkin's disease.
10. Acute and chronic leukemia
11. Ulcerative colitis.
12. Coccidioidomycosis.
13. Malaria.
14. Poliomyelitis.
15. Blastomycosis.
16. Non-specific iritis and uveitis.
17. Moniliasis.
18. Virus infections.
19. Cancer.
20. Yeasts and molds.

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*This table is from "Penicillin in Clinical Medicine," by F. Kenneth Albrecht, M.D., *Current Medical Digest*, February, 1946.

ATYPICAL CHRONIC GLOMERULONEPHRITIS

Report of Cases

GUY W. DAUGHERTY, M.D., ARCHIE H. BAGGENSTOSS, M.D., and NORMAN M. KEITH, M.D.
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FOR some time physicians have recognized the difficulty of diagnosis in regard to certain patients who have chronic glomerulonephritis. However, after repeated observations of several such patients, over periods of months or years, the true course of the disease can be better understood. Our attention was particularly focused on a few patients, in whom the first symptoms appeared to be due to cardiovascular disease but who later showed the signs of lipoid nephrosis. Three such cases have been studied. The characteristic feature of each was that cardiac decompensation secondary to hypertension failed to explain the persistence of dependent edema. Further observations revealed considerable proteinuria, hypoproteinemia and hyperlipemia. From the findings observed during the course of five years in our first case we made the probable diagnosis of chronic glomerulonephritis and in one of the succeeding two cases typical glomerular findings were present on pathologic study. The difficulties of appraisal during the unusual course of these patients and of making the ultimate diagnosis will be brought out in the following report.

Report of Cases

Case 1.—The patient was forty-three years of age and the wife of a farmer. Her family history revealed that her father had died of uremia at fifty-four years of age and one sister had had a "stroke." In her childhood the patient had pleurisy and in 1918 influenza. Her weight in 1919 was 150 pounds (68.0 kg.) but for many years before admission to the Mayo Clinic her average weight had been 200 pounds (90.7 kg.). She had had two uneventful pregnancies. In 1927, 1930 and 1936 the patient had suffered from attacks of "rheumatism" lasting several weeks. These attacks were characterized by pain and soreness in many muscles and low-grade fever.

When she was first admitted to the Mayo Clinic on September 19, 1939, she complained of dyspnea and substernal pain on exertion and migraine type of headaches. Twelve years previously she had been told that her blood pressure was elevated. Ten years previously albuminuria had been found.

On examination the patient was of the short, obese type. Her height was 60½ inches (154 cm.) and her weight 221 pounds (100.2 kg.). The blood pressure varied from 145 to 230 mm. of mercury systolic and 90 to 130 diastolic. The average hourly blood pressure during a twenty-four hour period was 175 mm. of mercury systolic and 100 diastolic. The heart was slightly enlarged to percussion and a systolic murmur was heard both at the apex and at the base. There was no edema, enlargement of the liver or râles at the bases of the lungs. Ophthalmoscopic examination revealed that the retinal arterioles were generally narrowed, grade 1 to 2, with localized narrowings to grade 2 and chronic hypertensive sclerosis grade 1 (all graded on a basis of the least change being 1 and maximal change 4). There were scattered hemorrhages throughout the retina but no exudates were seen.

The patient was admitted to the hospital and was placed on a rigid reduction diet, containing 60 gm. of protein, 59 gm. of carbohydrate and 13 gm. of fat, equivalent to 600 calories, and the necessary supplements. A mild sedative and potassium sulfocyanate were also administered. Laboratory studies included a roentgenogram of the thorax which showed a prominent left ventricle; an electrocardiogram, which revealed an inversion of the T waves in leads I, II and IV-R and slightly depressed S-T segments in these leads; a pattern which has been designated by Barnes[2] as atypical left ventricular strain (Fig. 1). The flocculation reaction of the blood serum for syphilis was negative and the basal metabolic rate was +16 per cent. Routine urinalysis was made four times during the patient's stay in the hospital. The findings were a specific gravity ranging from 1.011 to 1.018, albuminuria, grade 2, in all specimens, no reducing substances in three while a slight reduction was observed in a single specimen. The urinary sediment was essentially negative. The concentration of hemoglobin was 12.7 gm. per 100 c.c. of blood; leukocytes numbered 8,600 in each cubic millimeter of blood; the concentration of urea in the blood was normal, 24 and 28 mg. per 100 c.c. of blood; the maximal urea clearance was normal (96 c.c.) and the content of sulfate in the serum was 3.7 mg. per 100 c.c. On September 26 the concentration of cyanate was 6.0 mg. in 100 c.c. of blood plasma (Table I).

During the patient's stay in the hospital she lost 5 pounds (2.3 kg.) and was instructed to follow a similar regimen at home. A diagnosis of diffuse arteriolar disease with hypertension, severe group 2, hypertrophy of the myocardium with degeneration and obesity, grade 3, was made.

The patient returned to the clinic in April, 1940, at which time her weight was 143 pounds (64.9 kg.), a loss of 78 pounds (35.4 kg.) since her admission on September 19, 1939, or in seven months. She was feel-

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Dr. Daugherty, who is a Fellow in Medicine, Mayo Foundation, is now serving as Captain in the Medical Corps, A.U.S. Dr. Baggenstoss is a member of the Section in Pathologic Anatomy and Dr. Keith, Division of Medicine, Mayo Clinic, Rochester, Minnesota.

TABLE I. DATA ON CASE 1

Date	Whole blood				Blood serum					Blood plasma	
	Hemoglobin, gm. in 100 c.c.	Urea, mg. in 100 c.c.	Creatinine, mg. in 100 c.c.	Fasting sugar, mg. in 100 c.c.	Non-protein nitrogen, mg. in 100 c.c.	Protein, gm. in 100 c.c.	Albumin, gm. in 100 c.c.	Albumin-globulin ratio	Sulfate, mg. in 100 c.c.	Cyanate, mg. in 100 c.c.	
9–20–39	12.7	24									
9–22–39		28*							3.7		ECG
9–25–39										4.9	
9–26–39										6.0	
4–22–40	13.8										
4–23–40		28†								6.4	
3– 3–44	11.7	22			28	4.3	2.8	1.9:1	3.8	9.8	
3– 6–44‡											ECG
3–10–44											ECG
3–13–44										14.4	
3–20–44					33	4.4	2.7	1.6:1		13.3§	
10–20–45**	9.4	60		144	45	5.3	3.4	1.8:1	6.0		
10–23–45											ECG
11– 5–45				117							
11– 9–45	12.3	76	2.5	113	53	6.1	3.9	1.8:1	6.3		

*Urea clearance (maximal) 96 c.c.

†Urea clearance (standard) 38 c.c.

‡On March 8, 1944, concentration of cholesterol 447 mg.; cholesterol esters 234 mg.; lecithin 369 mg.; fatty acids 766 mg.; total lipoids 1,213 mg. in 100 c.c. of plasma.

**Concentration of cholesterol 383 mg.; cholesterol esters 267 mg.; lecithin 523 mg.; fatty acids 926 mg.; total lipoids 1,309 mg. in 100 c.c. of plasma.

§During previous seventeen days the patient had ingested a total of 6.0 gm. of potassium sulfocyanate.

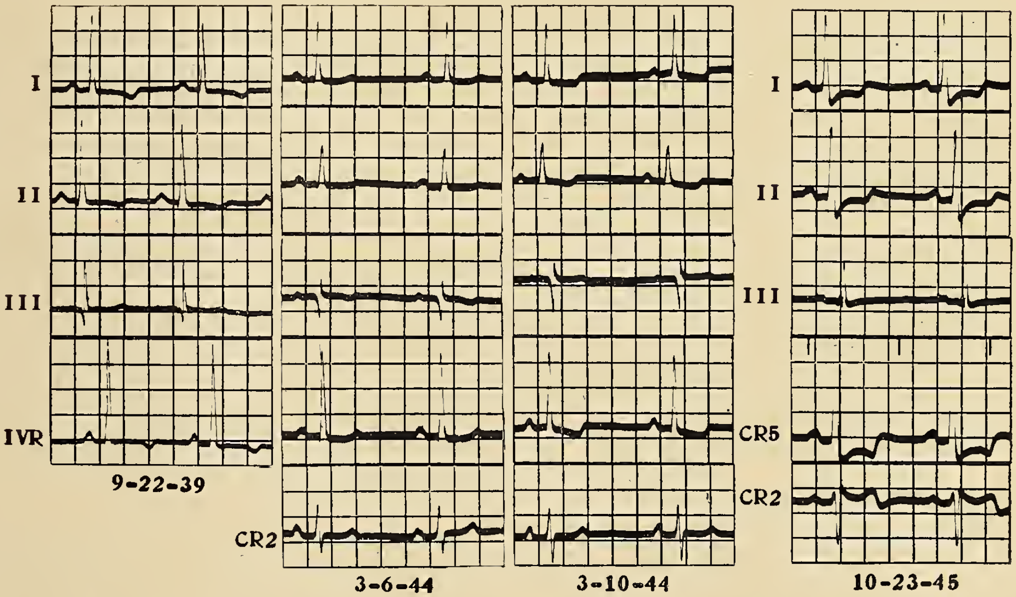

Fig. 1. (Case 1). Roman numerals and capital letters designate the lead. In the electrocardiogram taken on September 22, 1939, the T waves in leads I, II and IV-R are inverted. The S-T segment in these leads is slightly depressed. These configurations conform to the pattern designated atypical left ventricular strain (Barnes). In the electrocardiogram recorded on March 6, 1944, the T waves in leads I, II and IV-R have become upright. No characteristic pattern is present. During the three days preceding the one on which this tracing was taken, the patient received 9 cat units of digitalis. During the period between March 6 and March 10, 1944, the patient received an additional 8 cat units of the drug. The alterations in the electrocardiogram between these latter dates are probably secondary to the effect of medication with digitalis. In the final electrocardiogram, taken on October 23, 1945, the S-T segments in leads I, II and CR-5 are depressed slightly but there is no significant variation from the original (September 22, 1939) pattern of left ventricular strain.

ing much better, having very little dyspnea on exertion. Her blood pressure on April 22 was 170 mm. of mercury systolic and 90 diastolic. However, when she was at rest the following day it fell to 130 systolic and 75 diastolic. On physical examination the heart was somewhat enlarged, as noted previously. A systolic murmur was still heard over the apex and the base. There was no evidence of pulmonary congestion, hepatic enlargement or dependent edema. On ophthalmoscopic examination the retinal arterioles appeared much the same as seven months previously except that there were no localized narrowings and no hemorrhages were visible. A roentgenogram of the thorax did not show changes from that taken on September 19, 1939. Routine urinalysis revealed a specific gravity of 1.032 and albuminuria, grade 4. There were no reducing substances in the urine nor any abnormal elements in the sediment. The concentration of hemoglobin was 13.8 gm. per 100 c.c. of blood, the concentration of urea was 28 mg. in 100 c.c. of blood and the standard urea clearance was 38 c.c. The cyanate level in the blood had apparently remained constant, for on April 23 it was 6.4 mg. in 100 c.c. of plasma (Table I). A similar diagnosis to that of her first admission was made. The patient was advised to keep her weight at 140 pounds (63.5 kg.) and to continue the same therapeutic regimen.

The patient's third visit to the Mayo Clinic was on March 2, 1944. Since her previous admission in April, 1940, the patient had got along very well until September, 1943. Up to that date she had adhered to the reduction diet and her weight was 160 pounds (72.6 kg.). In January, 1944, she had had an attack of influenza and since then she had noticed some dyspnea and tightness beneath the sternum on mild exertion and a slow increase of weight. In the last four years her systolic pressure had averaged 190 mm. of mercury. One week before her third visit to the clinic she became orthopneic and noticed edema of the lower extremities.

On examination her weight was 197 pounds (89.4 kg.). She was orthopneic. The mucous membranes did not appear pale. There was moderate edema of the legs. The lungs were clear. The heart was slightly enlarged. The edge of the liver was palpated on inspiration. The bood pressure on admission was 160 mm. of mercury systolic and 100 diastolic and averaged hourly over a twenty-four hour period 145 systolic and 90 diastolic. On ophthalmoscopic examination the retinal arterioles showed both general narrowing and hypertensive sclerosis, grade 2. One soft exudate was visible in the superior temporal region of the left fundus.

A diagnosis of diffuse arteriolar disease with hypertension, group 3, myocardial degeneration with decompensation and obesity was made. The patient was immediately sent to the hospital and put at rest in bed. She was given a reduction diet, digitalis, a mild sedative and potassium sulfocyanate.

Further laboratory tests included electrocardiograms on March 6 and March 10. The tracings on March 6 revealed that the T waves in leads I, II and IV-R were upright; no characteristic pattern was present. From March 3 to March 10 the patient received 17 cat units of digitalis and the alterations in the electrocardiogram on March 10 were probably secondary to the effects of administration of digitalis (Fig. 1). Routine urinalysis was performed nine times while the patient was in the hospital. The specific gravity ranged from 1.007 to 1.020. As previously on April 23, 1940, albuminuria, grade 4, was present and there were no reducing substances. Quantitative estimation of the protein in a specimen of urine of 1,950 c.c. collected in twenty-four hours was 0.6 gm. in 100 c.c. and a total of 11.7 gm.; the chlorides calculated as sodium chloride were 0.3 gm. per 100 c.c. and a total of 5.8 gm. At times there were a few erythrocytes and leukocytes in the sediment. In a single urinalysis a few hyaline and granular casts were present. On examination of the blood the erythrocyte count was 4,200,000 in each cubic millimeter of blood and the concentration of hemoglobin was 11.7 gm. in 100 c.c. of blood. The concentration of urea was 22 mg. in 100 c.c. of whole blood, that of sulfate was 3.8 mg. in 100 c.c. of serum and that of cyanate was 9.8 mg. in 100 c.c. of plasma (Table I).

Soon after the patient's admission to the hospital it was observed that in spite of the lack of evidence of congestion in the lungs or liver the dependent edema was still severe. Evidently, it was not due to uncomplicated myocardial failure secondary to hypertension. Estimation of the serum protein and plasma lipoids revealed the interesting findings of distinct hypoproteinemia and an increase of lipoids. These findings in the blood along with considerable proteinuria indicated a condition simulating lipoid nephrosis. The concentration of protein was 4.3 gm. in 100 c.c. of serum, that of albumin was 2.8 gm. in 100 c.c. of serum, that of cholesterol was 447 mg. in 100 c.c. of plasma, that of lecithin 369 mg. in 100 c.c. of plasma, total fatty acids 766 mg. in 100 c.c. of plasma and total lipoids 1,213 mg. in 100 c.c. of plasma (Table I). Because of these findings the protein content of the 1,000 calorie diet was increased to 80 gm., the salt content was reduced and the fluids were limited to 1,200 c.c.

On March 7 signs of consolidation were observed over the lower part of the right lung. On March 10 a roentgenogram indicated pulmonary infarction in that region and the patient's temperature rose to 100° F. Pain persisted in the lower right portion of the thorax for the next eight days. Because the concentration of cyanate reached 14.4 mg. in 100 c.c. of plasma on March 13 the daily dose of potassium sulfocyanate was reduced. No evident toxic symptoms developed although on March 20 the concentration of cyanate was still 13.3 mg. in 100 c.c. of plasma.

The patient gradually decreased in weight and when dismissed on March 24 weighed 174 pounds (78.9 kg.)—a loss of 23 pounds (10.4 kg.) since admission. This loss of weight occurred without any increase of the concentration of serum protein. She was instructed to follow rigidly the diet ingested while in the hospital but the fluids were increased from 1,200 to 1,600 c.c. She was also instructed to take 1 cat unit of digitalis a day, 0.2 gm. of potassium sulfocyanate five days in each week and 30 mg. of the sedative phenobarbital three times a day. The following diagnosis was made:

in addition to severe diffuse hypertensive cardiovascular disease and obesity, chronic glomerulonephritis with nephrotic features.

On October 19, 1945, the patient returned for re-examination and further advice. After her dismissal in March, 1944, constipation had been troublesome but gradually this condition improved. She did some gardening and later in the summer a little housework. Since midsummer of 1944 she had slowly gained weight because, as she stated, she was easily exhausted and was unable to do active work.

On examination the patient was distinctly obese, her weight being 193 pounds (87.5 kg.). There was edema, grade 1 to 2, of the lower legs but none elsewhere. The blood pressure was 220 mm. of mercury systolic and 110 diastolic. The heart was enlarged; a loud systolic murmur was heard over the apex and the second aortic sound was distinctly accentuated. Throughout the lungs a few sibilant râles were heard but no fine or coarse moist râles. The liver did not seem enlarged. On palpation of the peripheral arteries there was slight but definite thickening. Ophthalmoscopic examination revealed findings in the retinal arterioles generally similar to those on March 2, 1944. However, along the left inferior temporal vessels there were a few small hemorrhages and old exudates and along the left superior temporal vessels there was a considerable hemorrhage. These findings were considered to be due to venous obstruction. No cotton-wool patches were visible.

Laboratory studies revealed definite cardiac enlargement in a roentgenogram of the thorax. The electrocardiogram revealed a rate of 59, sinus bradycardia, inverted T wave in lead I, diphasic T wave in lead II, iso-electric T wave in lead III; inverted T wave and depressed S-T segment in chest lead IV, CR-5 (Fig. 1). A single routine urinalysis showed a specific gravity of 1.015, albuminuria, grade 4, no reducing substances, a few hyaline, granular casts in the sediment, 22 leukocytes to a high power field and no erythrocytes. Quantitative estimation of the urinary protein in 1,300 c.c. of urine showed 0.8 gm. in 100 c.c., total 10.4 gm.; chlorides 0.5 gm. in 100 c.c., total 6.5 gm. On examination of the blood the concentration of hemoglobin was decreased to 9.4 gm. per 100 c.c. of blood, indicating definite anemia. The concentration of urea was elevated to 60 mg. per 100 c.c. of blood, the fasting blood sugar to 144 mg. per 100 c.c. and sulfate to 6.0 mg. per 100 c.c. of serum. The concentration of protein was 5.3 gm. per 100 c.c. of serum and that of albumin 3.4 gm. per 100 c.c. of serum, concentrations below normal but distinctly higher than in March, 1944, nineteen months previously. The concentration of lipoid substances in the blood plasma was still high, and similar to those of March, 1944. The finding of increased fasting blood sugar, 144 mg. in 100 c.c. of blood, on October 20 (Table I) suggested a trial of an Exton and Rose glucose tolerance test. This was carried out on November 5. No sugar was excreted in the urine during the test but the blood sugar rose in half an hour to 190 and in one hour to 252 mg. in 100 c.c. (Table II). Such a test would indicate that diabetes mellitus was present. This possibility will be discussed later.

The patient was placed on the same diet as on March 20, 1944, 1,000 calories, 80 gm. of protein, 80 gm. of carbohydrate, salt poor and fluids 1,600 c.c. She was given 1 cat unit of digitalis daily, 30 mg. of phenobarbital three times a day and a codeine cough mixture. On this regimen she gradually lost weight, losing 10 pounds (4.5 kg.) in twenty-six days, and the edema of the lower legs decreased to a trace. Study of the blood on November 9 showed that there was still considerable renal insufficiency, the blood urea being increased to 76 mg., the blood creatinine to 2.5 mg. and serum sulfate to 6.3 mg. in 100 c.c. However, in spite of the renal retention of these substances the hemoglobin was increased to 12.3 gm., the serum protein to 6.1 gm. and serum albumin to 3.9 gm. in 100 c.c. (Table I). The patient was dismissed on November 17 feeling much better, having little dyspnea even on effort, clear of râles in the lungs and practically free of dependent edema. Since returning home the patient has followed the same regimen and reports that she is losing weight and gaining strength.

TABLE II. GLUCOSE TOLERANCE TEST OF EXTON AND ROSE*

Time, a.m.	Glucose ingested, gm.	Blood sugar, mg. in 100 c.c.	Urine	
			Volume, c.c.	Sugar, gm.
8:10		117	48	0
8:13	50			
8:43	50	190		
9:13		252	26	0

*No food other than glucose was ingested before or during test.

The diagnosis on this visit was diffuse arteriolar disease with hypertension, group 2, myocardial degeneration with reduced reserve, diffuse bronchitis, chronic glomerulonephritis with nephrotic features and perhaps mild diabetes mellitus (abnormal blood sugar curve).

Case 2.—The patient was a retired housewife, seventy-five years of age. Her family history was irrelevant. Her past history revealed that she had had a severe attack of typhoid fever at the age of seventeen years and that she had had frequent sore throats but her history was otherwise negative for acute infectious diseases. She had never been pregnant. She had known for the past ten years that her blood pressure was elevated. Four years prior to admission, she had begun to have dyspnea on exertion. In the four weeks preceding admission she had noted increasing dyspnea, orthopnea, cough and dependent edema. In the week prior to admission she had experienced anorexia and had vomited frequently.

On admission to the hospital February 10, 1944, the patient presented a picture of congestive heart failure. Her height was 61¾ inches (157 cm.) and her weight 135 pounds (61.2 kg.). The blood pressure was 230 mm. of mercury systolic and 90 diastolic. On palpa-

TABLE III. DATA ON CASE 2

	Whole Blood				Blood serum					
Date, 1944	Hemoglobin, gm. in 100 c.c.	Urea, mg. in 100 c.c.	Creatinine, mg. in 100 c.c.	Fasting sugar, mg. in 100 c.c.	Non-protein nitrogen, mg. in 100 c.c.	Protein, gm. in 100 c.c.	Albumin, gm. in 100 c.c.	Albumin-globulin ratio	Sulfate, mg. in 100 c.c.	
2–11	11.6	212	3.0							ECG
2–14		198	2.8							
2–17		196	2.9							
2–21		152								
2–26		104	1.9		111	4.7	2.4	1.0:1		
3–1		74	1.7							
3–6		62			48	4.3	2.4	1.2:1		
3–14		56								
3–15	7.3									
3–18	9.4*									
3–21		74	1.7							
3–23	8.5									
3–27	7.7	62			61	4.1	2.4	1.4:1		
4–3	8.5	46								
4–7†		36		139	33	4.9	2.7	1.3:1	6.1	
4–15‡										

*Patient was given a transfusion of 500 c.c. of blood on March 17.
†Concentration of cholesterol 305 mg., cholesterol esters 199 mg., lecithin 380 mg., fatty acids 499 mg., and total lipoids 754 mg. in 100 c.c. of blood plasma
‡Patient died.

tion of the peripheral arteries considerable sclerosis was observed. The pulse was 100 and the temperature 99°F. The patient was orthopneic. The heart was enlarged. Râles were heard posteriorly at the bases of the lungs, the liver was enlarged and there was a small amount of dependent edema. Ophthalmoscopic examination revealed the retinal arterioles to be narrowed, grade 1, and there was sclerosis of the chronic hypertensive type, grade 1, graded on a basis of 1 to 4. There was anemia of the optic disks and retinal hemorrhages were noted, which were thought to be due to anemia. A roentgenogram of the thorax showed some enlargement of the cardiac shadow and calcification of the aorta. On February 11, 1944, electrocardiographic tracings indicated left axis deviation but no other significant alterations (Fig. 2). The flocculation reaction of the blood serum was negative for syphilis.

Routine urinalysis revealed on thirteen occasions a specific gravity of 1.010 to 1.020, albuminuria, grade 4, no reducing substances; in only a single analysis were hyaline and granular casts present; frequently there were erythrocytes, grade 2 to 3 and leukocytes, grade 1 to 3. The protein content of the urine in three specimens ranged from 0.87 to 1.53 gm. in 100 c.c. Similar analysis of the chloride content revealed concentrations of 0.25 to 0.37 gm. in 100 c.c. of urine. Chemical study of the blood showed that the patient was suffering from severe renal insufficiency. On February 11, 1944, the concentrations of urea and creatinine were 212 and 3.0 mg. per 100 c.c. of blood, respectively.

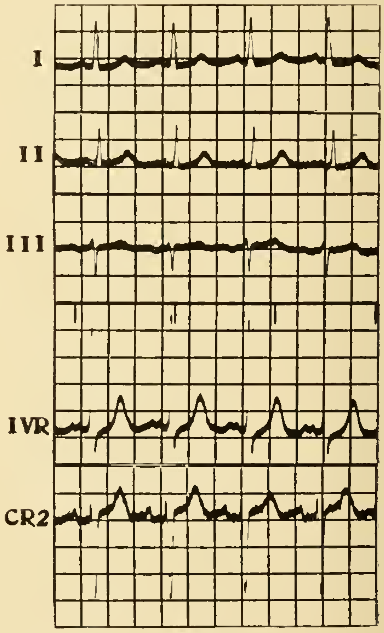

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Fig. 2 (Case 2). Other than left axis deviation, there are no significant features in this electrocardiogram.

The hemoglobin content was 11.6 gm. in 100 c.c. of blood but later, on March 15, 1944, it was observed to have decreased to 7.3 gm. per 100 c.c. of blood and the erythrocytes to 2,770,000 per cubic millimeter of blood.

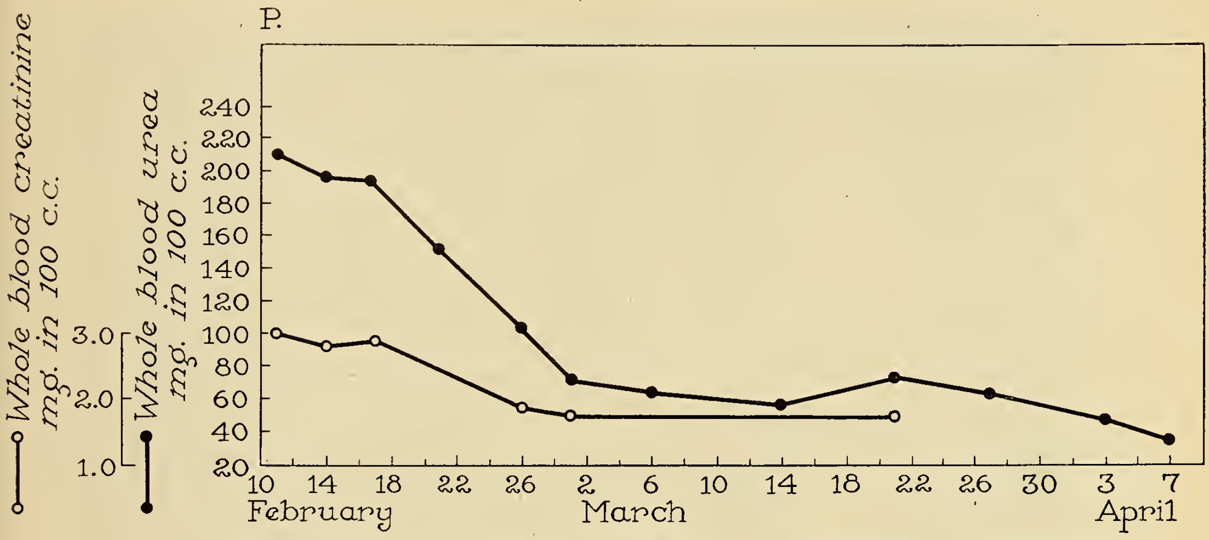

Fig. 3 (Case 2). Fall in blood urea and creatinine during period of improvement in renal function.

The concentration of protein varied from 4.1 to 4.9 gm. in 100 c.c. of serum and the albumin-globulin ratio from 1:1 to 1.4:1. The plasma lipoids and phospholipids were increased, cholesterol 305 mg., cholesterol esters 199 mg., lecithin 380 mg., total fatty acids 449 mg. and total lipoids 754 mg. in 100 c.c. of plasma respectively (Table III). On March 17, 1944, a transfusion of 500 c.c. of citrated blood was given.

Because of the severe myocardial and renal failure present on admission the patient was given 0.5 gm. of aminophylline in 500 c.c. of a 20 per cent solution of glucose every day for eight consecutive days. Digitalis was also administered. During the period of treatment in the hospital there was a gradual improvement of the patient's condition. Her dyspnea became less noticeable and her weight decreased 11 pounds (5.0 kg.). Anorexia and nausea disappeared. With this clinical improvement there was a parallel improvement of myocardial and renal functions. The latter was indicated by a steady decrease of the content of blood urea from a conspicuous elevation to normal. There was also a fall of the blood creatinine to a normal concentration (Fig. 3). However on April 7, 1944, the serum sulfate was 6.1 mg. in 100 c.c., distinctly above the normal concentration, indicating that there was still some definite renal dysfunction. On the same date the fasting blood sugar was 139 mg. in 100 c.c. This concentration was also somewhat above the accepted normal upper limit of 120 mg. in 100 c.c. (Table III). On the sixty-fourth day in the hospital the patient fell and sustained a fracture of the neck of the right femur. She died two days later on April 15, 1944.

The clinical diagnosis was diffuse hypertensive cardiovascular disease with myocardial degeneration and failure, chronic glomerulonephritis with nephrotic features, secondary anemia and fracture of the right femur.

Necropsy.—There was moderate edema of the legs. The left pleural cavity contained 600 c.c. of clear fluid. The pericardial sac contained 50 c.c. of clear, straw-colored fluid.

The heart weighed 396 gm. The left ventricle was slightly dilated. The coronary arteriosclerosis was graded 1. There was arteriosclerosis of the aorta, grade 2+.

There was purulent exudate in the bronchi of the lower lobes of both lungs. The consistency of the lower lobes was slightly increased and there was slight edema. There was healed tuberculosis of the hilar lymph nodes.

The right kidney weighed 160 gm. The surface was finely granular (Fig. 4*a*) and the consistency was moderately increased. A number of small cortical cysts were present. The markings of the cut surface were slightly indistinct. The cortex was 0.6 cm. in width and the medulla 1.0 cm. The left kidney weighed 170 gm. and had the same appearance as the right.

Histologic Examination.—Sections of the myocardium revealed severe arteriolosclerosis with focal regions of muscular atrophy and fibrosis.

Sections of the lungs revealed purulent bronchitis and early bronchopneumonia. Sections stained for fat with Sudan III revealed droplets of lipoid in many of the pulmonary capillaries.

There were mild chronic passive congestion of the liver and severe arteriolosclerosis.

Examination of many sections of both kidneys failed to reveal any normal glomeruli. The most constant abnormality was a conspicuous increase of the number of endothelial cells of the glomerular capillaries. Many of the gomerular tufts were converted into very cellular, bloodless structures in which the capillaries appeared to be partially or completely obstructed. About a third of the gomeruli were converted into fibrotic, hyalinized and obviously functionless structures. There were few epithelial crescents and some of these were also hyalinized. Adhesions of the glomerular tuft to the capsule and pericapsular fibrosis were frequently observed. There was no evidence of intercapillary glomerulosclerosis (Kimmelstiel-Wilson disease). Many of the tubules were collapsed and lined by atrophied epithelium. Many also were dilated and filled with a homogeneous acidophilic substance interpreted as precipitated albumin. Polymorphonuclear cells as well as erythrocytes were occasionally observed in these dilated tubules. Some of the tubular epithelial cells contained lipoid droplets, whereas others revealed evidence of hydropic degeneration (Figs. 4*b* and 5*a*).

Most of the arterioles possessed walls greatly thickened by a subintimal deposit of hyaline material. This substance stained red with azocarmine and occasionally appeared necrotic. The lumina were greatly narrowed and in a few instances appeared entirely obliterated The arteries also revealed great thickening of their walls. Reduplication of the elastic layer of the intima and collagenous intimal thickening were common in these vessels (Fig. 5*b*).

Sections of other organs did not appear to be abnormal except for the presence of severe arteriolosclerosis. The islets of Langerhans of the pancreas appeared normal.

The following anatomic diagnoses were made: (1) chronic glomerulonephritis with renal insufficiency; (2) hypertrophy of heart (hypertension) with dilatation of the left ventricle; (3) hydrothorax (600 c.c., left) and edema of legs; (4) fracture of right femur; (5) pulmonary fat embolism; (6) purulent bronchitis and broncho-pneumonia; (7) generalized arteriolosclerosis.

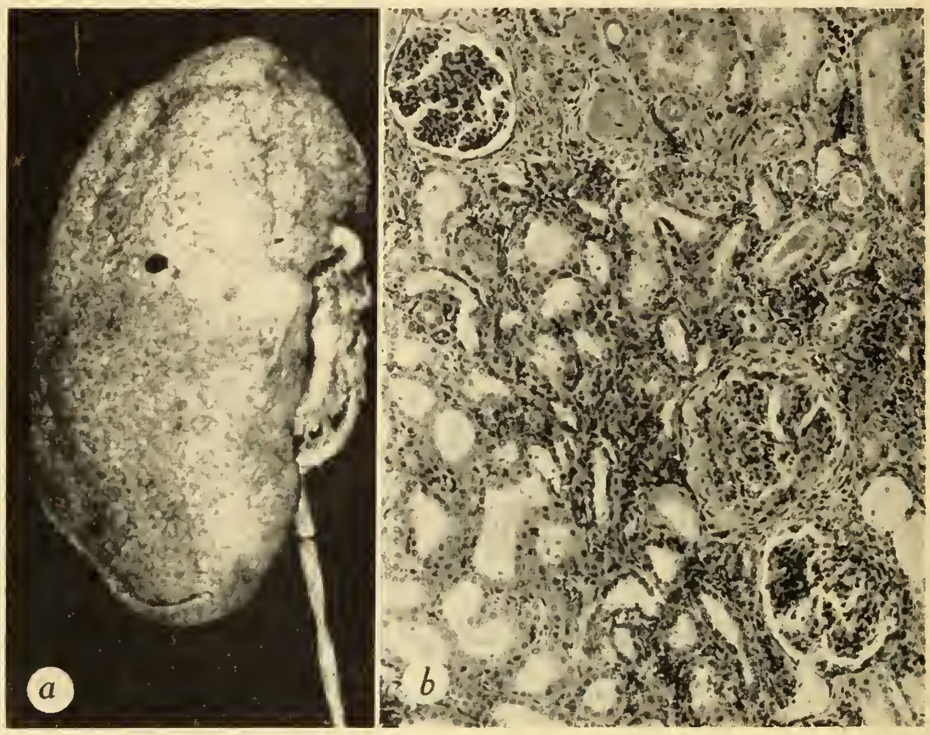

Fig. 4 (Case 2). (*a.*) Gross appearance of kidney: finely granular surface with shallow scars. (*b.*) Histologic appearance of kidney: endothelial proliferation in glomerular tufts; subintimal hyalinization of arterioles (hemotoxylin and eosin x120).

Case 3.—The patient, a corsetiere and housewife, was fifty-four years of age. Her family history revealed that two sisters had hypertension but it was otherwise irrelevant. Her past history disclosed that she had never been pregnant and that the only infectious disease from which she had suffered was influenza in 1918.

When the patient was admitted to the Mayo Clinic March 30, 1944, she complained of severe edema of the lower extremities. For six years she had had severe early morning headaches, relieved by arising. Two years before admission dependent edema had developed and she had consulted a physician. She had not previously sought medical advice or been aware of the existence of hypertension. On examination at that time her blood pressure had been 260 mm. of mercury systolic and 140 diastolic. The electrocardiogram had revealed left axis deviation. The urine had contained a considerable amount of albumin. Blood studies had shown a hemoglobin concentration of 15.9 gm., blood sugar 95 mg., nonprotein nitrogen 32 mg., serum protein 4.6 gm., albumin 2.7 gm. and globulin 1.9 gm. in 100 c.c. A diagnosis of hypertensive cardiovascular disease had been made. Under treatment the edema had subsided. For the seven months prior to admission to the clinic there had been a gradual return of the edema.

On physical examination the patient's height was 64 inches (163 cm.) and her weight 146 pounds (66.2 kg.). There were severe edema as high as the waist and moderate edema of the upper extremities. There was also a moderate degree of ascites. The mucous membranes did not appear abnormally pale. The average of hourly determinations of blood pressure for twenty-four hours was 210 mm. of mercury systolic and 115 diastolic. The heart was enlarged. The lungs seemed to be clear; the liver was not enlarged. Ophthalmoscopic examination revealed the retinal arterioles to be generally narrowed, grade 2, with localized constrictions, grade 2 to 3, and chronic sclerosis, grade 2, all graded on a basis of 1 to 4, the minimal change being 1 and the maximal 4. A few superficial hemorrhages and one cotton-wool exudate were noted.

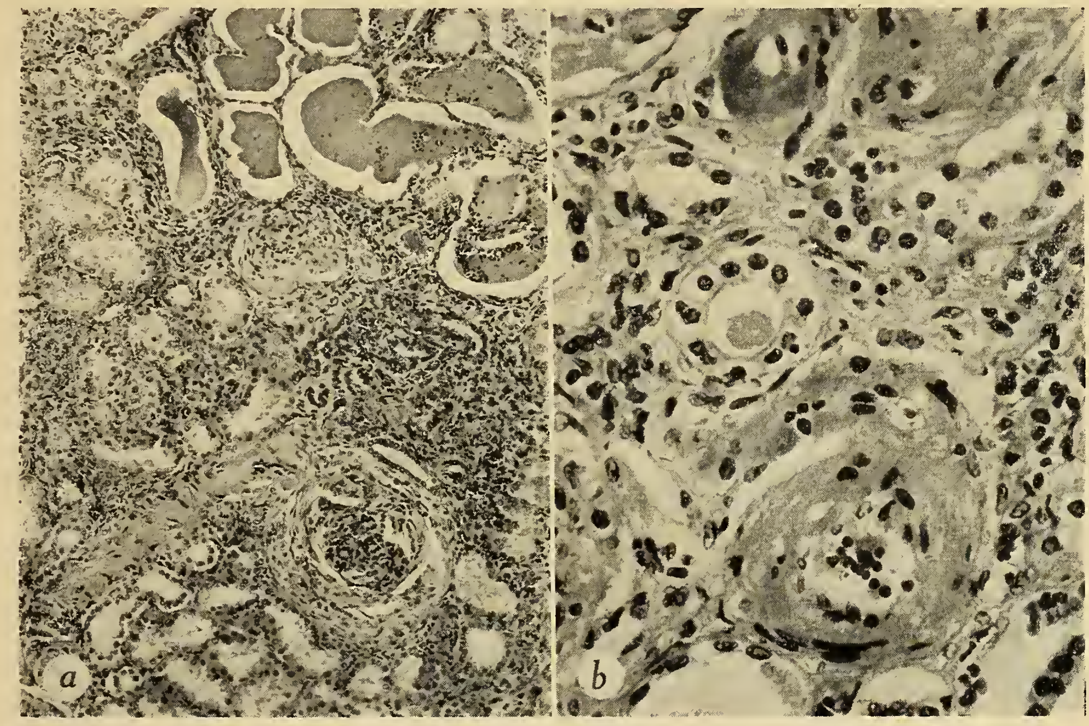

Fig. 5 (Case 2). Histologic appearance of kidney. (*a*) Hyalinized glomerulus, epithelial crescent; dilated tubules containing precipitated albumin (hematoxylin and eosin x95). (*b*) Hyalinized glomerulus; subintimal hyalinization of arterioles (hematoxylin and eosin x330).

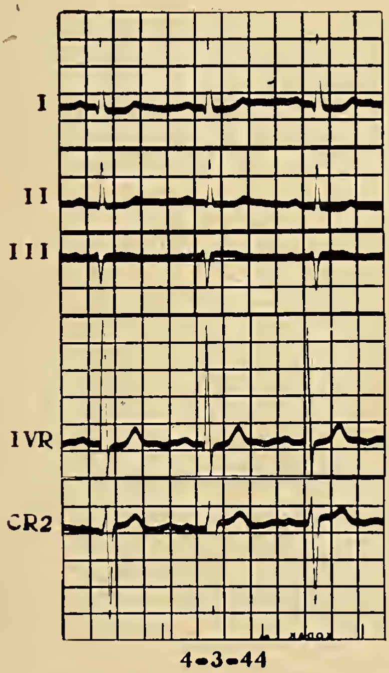

Fig. 6 (Case 3). Other than left axis deviation there are no significant features in this electrocardiogram.

Further studies included two roentgenograms of the thorax, which showed cardiac enlargement and some fluid in the bases of both pleural cavities. The electrocardiogram revealed a rate of 78, sinus rhythm and left axis deviation (Fig. 6). Routine analysis was made on eleven specimens of urine. The specific gravity varied from 1.011 to 1.030. There was albuminuria, grade 3 to 4. No reducing substances were observed. The sediment on one occasion contained a few erythrocytes and a few hyaline and granular casts; usually there were five to ten leukocytes to a high-power field. Quantitative estimations of the protein in the urine were made on two twenty-four hour collections of urine. The concentration was 1.7 and 1.3 gm. in 100 c.c. of urine and the total excretion was 11 to 27 gm. The concentration of chlorides, estimated as sodium chloride, was 0.18 to 0.85 gm. in 100 c.c. of urine. Examinations of the blood revealed a concentration of hemoglobin of 13.3 gm. and of urea 28 mg. in 100 c.c. of blood; a concentration of protein 4.0 gm., of albumin 2.0 gm., of globulin 2.0 gm. and of sulfate 5.0 mg. in 100 c.c. of serum, respectively. On April 3 estimation of the plasma lipoids showed cholesterol 480 mg., cholesterol esters 277 mg., lecithin 568 mg., total fatty acids 556 mg. and total lipoids 1,036 mg. in 100 c.c.

TABLE IV. DATA ON CASE 3

	Whole blood			Blood serum						Blood plasma	
Date	Hemoglobin, gm. in 100 c.c.	Urea, mg. in 100 c.c.	Fasting sugar, mg. in 100 c.c.	Nonprotein nitrogen, mg. in 100 c.c.	Protein, gm. in 100 c.c.	Albumin, gm. in 100 c.c.	Albumin-globulin ratio	Sulfate, mg. in 100 c.c.	Acacia, gm. in 100 c.c.	Cyanate, mg. in 100 c.c.	-
3-31-44	13.3	28		32	4.0	2.0	1.0:1.0	5.0			
4-3*											ECG
4- 8			90								
4-10										6.4	
4-11		56†									
4-15‡		40		51	2.2	1.1	1.0:1.1		1.6§		
4-17										11.1	
4-21				56	2.5	1.2	1.0:1.1		1.4§	10.1**	
4-24				57	2.6	1.3	1.0:1.0		1.6§		
6- 1-45¶											

*Concentration of cholesterol 480 mg., cholesterol esters 277 mg., lecithin 568 mg., fatty acids 556 mg., total lipoids 1,036 mg. in 100 c.c. of plasma.
†Urea clearance 38 c.c. (Standard).
‡Serum calcium 8.2 mg. and serum phosphorus 2.8 mg. in 100 c.c.
§On April 10, 12, 14, 18 and 22 the patient was given intravenously 30 gm. of acacia in 500 c.c. of water (total 150 gm. of acacia).
**During previous twenty days the patient had ingested 14.4 gm. of potassium sulfocyanate.
¶ Patient died at home.

of plasma. On April 8 the fasting blood sugar was 90 mg. in 100 c.c. (Table IV).

Treatment during the patient's stay of twenty-four days in the hospital was directed chiefly toward reduction of the edema. Measures consisted of a low-salt, relatively high-protein (100 to 125 gm.) diet and limitation of fluids to 1,200 c.c. daily; 9 gm. of potassium nitrate daily; three intravenous injections of 1 c.c. of mersalyl (salyrgan); five intravenous injections of 30 gm. of acacia dissolved in 500 c.c. of distilled water; and 11 cat units of digitalis given over a five-day period. The patient lost 13 pounds (5.9 kg.) and the edema was distinctly reduced.

On April 15 the serum calcium was only slightly decreased to 8.2 mg. in 100 c.c.; however, the concentration of protein in the serum had decreased to 2.2 gm. and that of acacia had increased to 1.6 gm. in 100 c.c. This reciprocal relation of the concentrations of serum protein and acacia is the rule after the injection of solution of acacia. It is of interest that on April 11, the day following the first injection of solution of acacia, the blood urea rose to 56 mg. but the standard clearance of urea was relatively high (38 c.c.). However, an increased concentration of nonprotein nitrogen in the blood (51 to 57 mg.) was present until April 24. This latter finding was indicative of distinct renal insufficiency. The patient was also given a considerable amount of potassium sulfocyanate, approximately 0.6 gm. daily while in the hospital. This medication did increase the concentration of cyanate to 11.1 mg. in 100 c.c. of plasma and appeared to lower the patient's blood pressure. The variations of the morning readings during the last four days in the hospital were 155 to 165 mm. of mercury systolic and 90 to 100 diastolic. On April 24, when the patient was dismissed from the hospital, she was advised to follow the same dietetic and therapeutic regimen at home.

The subsequent course of the patient's illness was not satisfactory. On July 1, 1944, her physician reported the recurrence of edema, an estimation of blood pressure of 186 mm. of mercury systolic and 120 diastolic and a large amount of albumin in the urine. The patient's husband further reported on January 31, 1945, that the edema was then as severe as at any time during her illness. Apparently there was a gradual downward course during the next four months and on June 1, 1945, the patient died.

The clinical diagnosis in this case was severe diffuse arteriolar disease with hypertension, myocardial degeneration and chronic glomerulonephritis with nephrotic features.

Observations

Clinical Observations.—The three patients were women between the ages of forty-three and seventy-five years. Patient 1 was distinctly obese and excess of weight undoubtedly exaggerated her symptoms. Conversely a reduction regimen proved very helpful. Pregnancy could be excluded as an etiologic factor in Cases 2 and 3. The history and initial findings in the three cases were those of hypertensive cardiovascular disease. These included hypertension, enlargement of the heart, decreased cardiac reserve, temporary signs of myocardial failure, left axis deviation in the electrocardiograms (Figs. 1, 2 and 6) and narrowing of the lumina and thickening of the walls of the retinal arterioles. The occurrence of edema was subsequent to cardiovascular involvement and was associated with both myocardial failure and lipoid nephrosis. This sequence of events was clearly revealed in Case 1. Edema was more severe and generalized in Case 3 than in Cases 1 and 2 and it is of interest that the blood pressure was higher and more sustained and retinal alterations were more noticeable also in this case. Distinct secondary anemia occurred only in Case 2 and was probably due in part to renal insufficiency. The temporary reduction of the concentration of hemoglobin to 9.4 gm. in 100 c.c. of blood in Case 1, on October 20, 1945, and subsequent increase in the next three weeks to 12.3 gm. might possibly have been due to a temporary increase and subsequent decrease of volume of plasma. An increased volume of plasma has been demonstrated in cases of dropsy due to either myocardial failure[6] or lipoid nephrosis[4] and in Case 1 both these conditions prevailed. There were no clinical symptoms suggestive of diabetes mellitus in the three cases.

Chemical Observations.—Albuminuria was always present in the three cases and was particularly noticeable during the nephrotic phase of the disease. In this phase excretion of protein increased by a minimum of 0.6 gm. in 100 c.c. of urine in Case 1 and by a maximum of 1.7 gm. in 100 c.c. in Case 3 and amounted in twenty-four hours to the considerable total of 5.0 to 27.0 gm.* The protein concentration of the blood serum was reduced to between 4.0 and 4.3 gm. and the albumin fraction to between 2.0 and 2.7 gm. in 100 c.c. The low concentration of protein (2.2 gm.) in Case 3 on April 15, 1944, followed the injection of solution of acacia and was due to hypervolemia. Associated with this definite hypoproteinemia was a distinct increase of the lipoid content of blood plasma. The degree of lipoidema was equally conspicuous in Cases 1 and 3, the concentration of total lipoids amounting to 1,309 mg. and 1,036 mg. in 100 c.c. of plasma, respectively. In Case 2 lipoidema was less, the concentration amounting to 754 mg. in 100 c.c. In all three cases in addition to the increase of total lipoids, there was a relative increase above the normal concentration of cholesterol, cholesterol esters, lecithin and fatty acids (Tables I, III and IV).

It is of interest that renal function adequate for the removal of metabolic waste products, such as urea and creatinine, was present in the three cases at some time during the nephrotic phase. On admission renal insufficiency was severe in Case 2 but its occurrence proved to be temporary, as subsequent findings revealed a decided improvement (Table II, Fig. 3). For a period of four and a half years observations in Case 1 revealed adequate clearances of urea on two visits and normal concentration of sulfate in the serum at each visit. However, on the patient's fourth admission, six years after her initial visit, definite renal insufficiency was present and it appeared to be chronic.

For some years there has been an increasing consciousness of a relation between diabetes mellitus and the development of chronic diffuse nephritis. The work of Kimmelstiel and Wilson[9] was pertinent in this connection. We therefore were interested to learn that in our three cases repeated routine urinalyses, and in Case 1 urinalysis after the ingestion of glucose, according to the tolerance test of Exton and Rose[5], failed to reveal glycosuria. A fasting blood sugar in Case 3 was normal, 90 mg. in 100 c.c. in Case 2, 139 mg., a definitely abnormal concentration, while in Case 1, three estimations of the fasting blood sugar varied from 113 to 144 mg. in 100 c.c. The latter concentration led to the giving of an Exton and Rose glucose tolerance test to Patient 1 on November 5, 1945. This test revealed a distinctly abnormal blood sugar curve, the blood sugar rising at the end of an hour to 252 mg. in 100 c.c. (Table II). The latter observation would support a diagnosis of early diabetes mellitus.[10,11] On the other hand, the patient presented several metabolic problems, including obesity, low caloric and carbohydrate intake for the previous two weeks, hypertension and chronic renal insufficiency. In some of these various disturbances when diabetes is known to be absent, abnormally high glucose tolerance curves have been observed.[7,12] If the patient continues to reduce her weight and loses 30 to 40 pounds (13.6 to 18.1 kg.), it will be then important to repeat the glucose tolerance test.

Pathologic Observations.—These were carried out in a single instance, Case 2. The significant gross findings were kidneys of normal weight (330 gm. for the sum of the weights of the two kidneys), with finely granular surfaces, and an enlarged heart, having a weight of 396 gm. The left ventricle was slightly dilated and moderate arteriosclerosis of the coronary arteries was present. Histologic examination of many organs revealed severe generalized arteriosclerosis. Sections of the myocardium revealed severe arteriolosclerosis with focal regions of muscular atrophy and fibrosis. The microscopic examination of the kidneys left no doubt that the patient had been suffering from active progressive and chronic glomerulonephritis. The endothelial proliferation of the glomerular capillaries, the synechiae and the formation of epithelial crescents were all evidence of glomerular inflammation. On the other hand, the vascular changes were those of hypertension. The hyaline intimal thickening of the arteriolar walls, the reduplication of the elastic layer and the collagenous intimal thickening of the larger arteries were all typical of the changes that one finds in cases of hypertension. The occasional finding of necrosis of arteriolar walls and advanced collagenous intimal thickening and edema of arterial walls had been described by Bell[3] as typical of long-standing hypertension with acute uremia. There was no evidence of intercapillary glomerulosclerosis (Kimmelstiel-Wilson disease), and the islets of Langerhans in the pancreas appeared normal histologically.

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*See method of quantitative estimation in list of methods of chemical analysis at end of paper.

Comment

Chronic glomerulonephritis may be a lifelong disease.[1,8] Periods of latency alternate with those of acute exacerbations. Hypertensive involvement of the arterioles develops occasionally during the acute phase and usually during the chronic course of glomerulonephritis. However, in a few instances hypertension never develops. In our present cases the onset of hypertension preceded the development of lipoid nephrosis and evidence of severe renal damage. In fact our three cases for some time closely simulated cases of primary diffuse hypertensive disease in which pathologic study fails to reveal inflammatory lesions of the glomerulus. In Case 2 of this series the histologic findings in the kidney suggest that the underlying cause of the patient's illness was glomerulonephritis. However, the conspicuous histopathologic alterations in the arterioles and arteries of many organs support the clinical viewpoint that hypertension had been present for a long time. A reasonable explanation of these somewhat incoherent findings would be that the initial lesion was in the glomerulus and subsequently gave rise to hypertension, and that the progression of the vascular alterations, once they began, was more rapid than the progression of those in the glomerulus. If this viewpoint is correct the secondary hypertension led to diffuse vascular injury and thus added further damage to a primarily diseased kidney. An example of such a sequence of pathologic events, though some details were different from those of Case 2, was reported in 1939.[13]

We believe that such cases as herein described occur rarely but the fact that they do occur suggests a more critical attitude in diagnosing the condition of patients who have diffuse hypertensive disease. Excessive excretion of albumin and slow subsidence of edema when recovery of myocardial function seems evident should stimulate further investigation of renal function and the concentration of protein and lipoid constituents in the blood serum. Whether these patients were examples of early diabetes mellitus is debatable. Further study of Case 1 and of other similar cases should clarify this point.

The findings reported in these cases bring sharply to our attention the complicated problems involved in the development of the tetralogy of Bright: albuminuria, generalized edema, diffuse hypertensive phenomena and severe renal insufficiency. The variability of the occurence of any of these four conditions and the exact significance of each or all at a given period emphasize the great need for further investigations before we shall understand accurately their causation.

Summary

The clinical course of an atypical form of chronic glomerulonephritis was characterized initially by diffuse hypertensive disease of considerable duration. Subsequently lipoid nephrosis developed and later still definite renal insufficiency. Histologic findings in a single case revealed both inflammatory lesions in the glomeruli of the kidneys and conspicuous alterations in the arterioles throughout the body. It is suggested that the lesions in the glomeruli initiated the hypertension, which in turn gave rise to the lesions in the arterioles, and that the rate of progression of the

pathologic changes in the arterioles appeared to be more rapid than that in the glomeruli.

METHODS OF CHEMICAL ANALYSIS EMPLOYED IN THE PRESENT STUDY

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BLOOD PLASMA TRANSFUSIONS

(Continued from Page 1211)

are rare, caution should be exercised to prevent exaggeration of the importance of these reactions in clinical practice. However, since milder reactions are more or less frequently encountered, since sensitivity can be built up by repeated transfusions in certain cases, since the development of accidental sensitivity by young females from transfusions in early life may spoil their chance of having a family, and since child life can be saved by proper observations of the Rh relation between man and wife, the intra-group hemolytic reaction creates an important clinical problem that deserves the careful attention of all physicians.

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RELATIONSHIP BETWEEN PREGNANCIES AND AGE OF OCCURRENCE OF BREAST CANCER IN THE HUMAN

A Preliminary Report

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SEVERAL investigators have reported data which strongly suggest that the incidence of breast cancer is higher in single and in childless married women than in married women with children. Reviews of the literature on the subject are given by Geschickter[5] and Shimkin.[9] Dorn[3] has reported that the relative death rate from breast cancer is highest in single women, lowest in married women with children, and intermediate in childless married women. Duffield and Jacobson[4] reported that the increase in relative death rate of single women over married women is most noticeable in women past thirty-four years of age. In contrast to these findings, the relative death rate from uterine cancer was found to be lowest in single women and highest in childless married women.[3] Although married women are longer lived than unmarried women, it seems improbable that the relatively lower breast cancer death rate for women with children is due entirely to the better health associated with marriage. Childbearing apparently decreases the likelihood of death from breast cancer.

In mice, pregnancies affect the incidence of mammary carcinoma, but the incidence varies in the different strains (see review by Heston[6]). The females in some strains develop mammary carcinoma only if they are bred, but others develop cancer even as virgins. In those strains in which mammary carcinoma occurs in virgins as well as breeders, the tumor appears earlier in the breeders than in the virgins. Bittner[2] reported a difference of approximately seven months in a strain which he used. Andervont[1] found a difference of two months in another strain.

Although some strains of mice show an increase in the incidence of mammary cancer associated with an increase in the number of litters, the effect of number of litters on the age of occurrence is at least not very striking. Jones[7] reported data showing that the average age at death in cancerous females producing seven or more litters is lower than that for the less fertile females, but the number of females with a large number of litters is relatively small.

The effect that number of children may have on the incidence of breast cancer in women is not well established. Women with breast cancer are reported to have fewer children than women of the general population. In a report of 1,041 cases of infiltrating mammary cancer of whom 916 were married, Geschickter[5] reported data which show that only 54.4 per cent of the married women had more than one child. The average number of children per family was 2.3 as compared to 3.75 given in the 1920 census. Although women who develop breast cancer are usually less fecund than women who have not developed cancer, the effect of fertility on the age at which cancer occurs has not been subjected to detailed analysis. In one report a statement was made that the effect of pregnancies is to change the age at which the tumor occurs.[8]

The present paper is a preliminary report on data concerning the distribution of total pregnancies and ages at which breast cancer occurred.

Source of Material

The patients of the tumor clinic of the University Hospitals have furnished source material for the study. Practically all of the women are county patients who come from rural or small urban communities and belong to the same social-economic group.

Data are collected at the time the patient attends the clinic. At that time interviewers ask for information including histories of the patient's cancer, her pregnancies, breast feeding, and her family. She is, therefore, not unduly impressed by the questions about her pregnancies. The data are substantiated by referring to the pathologists' reports, hospital charts, and other professional records. Where it seems to be necessary, the data are checked with the patient's doctor or with other persons who can give the needed information. We express our apprecia-

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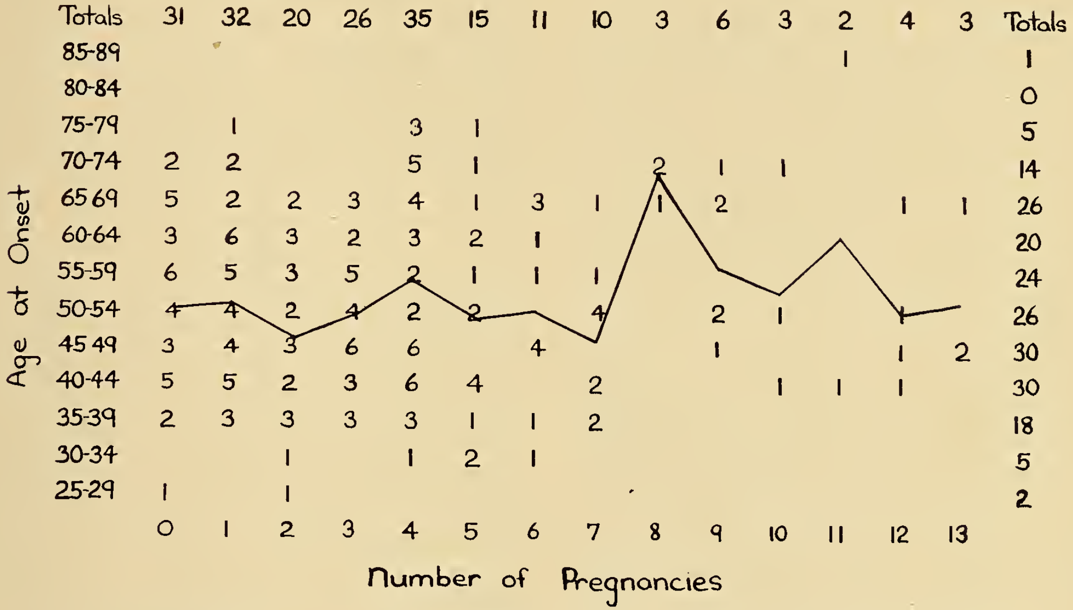
tion for the co-operation of those who make the study possible.

Data on women with gall-bladder disease are being collected as a control. Questions identical to those asked cancer patients are asked the control patients.



	0	1	2	3	4	5	6	7	8	9	10	11	12	13	Totals
Totals	31	32	20	26	35	15	11	10	3	6	3	2	4	3	
85-89												1			1
80-84															0
75-79		1			3	1									5
70-74	2	2			5	1			2	1	1				14
65-69	5	2	2	3	4	1	3	1	1	2			1	1	26
60-64	3	6	3	2	3	2	1								20
55-59	6	5	3	5	2	1	1	1							24
50-54	4	4	2	4	2	2		4		2	1		1		26
45-49	3	4	3	6	6		4			1			1	2	30
40-44	5	5	2	3	6	4		2			1	1	1		30
35-39	2	3	3	3	3	1	1	2							18
30-34			1		1	2	1								5
25-29	1		1												2

Fig. 1. Scatter graph of age of cancer occurrence and number of pregnancies. The line connects the average cancer ages of the various pregnancy groups.

Report of Cases

Although 253 cancer patients have been interviewed, complete data are not available concerning all of them. The records which are considered complete are referred to in the subsequent discussion.

Complete information about the total number of pregnancies and age of occurrence of cancer has been collected from 201 of the breast cancer patients. Fourteen single women and seventeen married women reported no pregnancies. The other 170 women reported 715 pregnancies, including eighty-nine abortions. Thirty-nine women had one abortion each; nine had two; five had three; three had four; and one had five. The average number of pregnancies for these 170 fertile cancer patients is 4.2. For all 201 women the average is 3.56. Approximately 46 per cent of the fertile women have had no more than three pregnancies. The distribution of these cancer patients according to the number of pregnancies is shown by the totals in figure 1. How this fertility compares with that of other women in the same social-economic group cannot be determined until more complete data on the control cases are collected. The fertility is definitely higher than that for the general population.

The average age of onset of breast cancer for the 201 cases is 53.4 ± 0.85 years. The standard deviation is 11.99. Although it is unwise to draw conclusions from the small number of reported cases, there is a suggestion that the distribution of the ages of cancer for all cases is bimodal with one modal class in the 46-47 age groups and another around age 67-68.

The distribution of ages of onset of cancer for the 201 patients according to the number of pregnancies is shown in figure 1. The ages of onset, grouped into classes of five-year range, are represented on the scale of ordinates in the scatter graph. The number of pregnancies are shown on the abscissal scale. The scatter distribution of persons in the two categories is shown by the numerals in the graph. The total number of individuals belonging to each cancer-age classification is given on the right side of the graph. The number of individuals belonging to each pregnancy classification is shown in the upper side, opposite to the pregnancy classes.

The distribution of the individuals in the figure suggests that the age of onset of breast cancer in these women is not correlated with the number of pregnancies they have had. This is also indicated by the broken line in the figure which connects the average age of onset of breast cancer for each pregnancy class. The average age for the thirty-one women with no pregnancies and for those with from one to seven pregnancies inclusive is in each case close to the average for the whole group, which is 53.4 years. Less regularity is found in the continuity of the line connecting the average ages of onset for those women who had eight to thirteen pregnancies. However, the total number of women falling into each of these classes is small, and the irregularity probably represents the effect of small numbers in the samples.

Only thirty-one of the women had no pregnancies and fourteen of these were single women. Although the numbers of individuals are small for purposes of comparison, it is interesting to note that the average age of onset for the fourteen single women is 50.9 and that for the seventeen married women reporting no pregnancies is 56.1 years. The difference is not statistically significant.

The data cannot be separated into those women who voluntarily had a low fertility and those who desired more pregnancies but were physiologically unable to become pregnant. They belong, however, to a social-economic group of women who tend to have a greater average number of children than women of the general population.

Only 124 of the cancer patients with pregnancies gave data which clearly establish the age of first pregnancy. The earliest reported age is fifteen and the latest is forty years. The average age of first pregnancy for the group is 25.9 years. No conclusion may yet safely be made, but the data indicate that the age of first pregnancy probably is not correlated with the age of occurrence of breast cancer in these women.

Although childbearing is recognized by many investigators as having an effect on the incidence of breast cancer, there seems to be no correlation between the age of occurrence of breast cancer and childbearing as measured by the total number of pregnancies. Apparently some factor other than pregnancies is responsible for the differences in relative death rates from breast cancer associated with the marital status of women.

Summary

Among 201 women from a common social-economic group, the average age of occurrence of carcinoma of the breast was 53.4 and the average number of pregnancies was 3.6. For the fertile women the average number was 4.2.

The average age of occurrence of breast cancer in these women was the same for the sterile women, those with low fertility, and those with a large number of pregnancies. The number of pregnancies is not correlated with age of occurrence of breast cancer in these women.

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MASSACHUSETTS APPROVES THE BARNES BILL

It is interesting to note that in a recent election in Massachusetts the Barnes Bill was passed by a 65 per cent majority on a referendum vote of the people of the state. The Barnes Bill provided that no union can operate in the state until the president and secretary of the union file with the Commissioner of Labor and Industries a statement of the union's aims; the names, addresses and salaries of all officers; initiation fees and scale of dues, fines and assessments. Thereafter, the union must report annually to the Commissioner: salaries paid to officers, all expenditures with name and address of recipient and amount of payment and receipts from dues, initiation fees, fines and assessments. And this in an industrialized state where both the AF of L and the CIO campaigned vigorously against the bill! The indication is that the citizens of Massachusetts, including union members themselves, are fed up with the irresponsibility of some labor unions.

THE RELATIONSHIP BETWEEN GENERAL PRACTITIONER AND SPECIALIST

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Change is an inherent part of the practice of medicine. We are all accustomed to it. We like it to come slowly, a little at a time, so that we may absorb it gradually and thus painlessly. Sudden spurts in the momentum of change are disturbing, cause apprehension that it may not be absorbed without serious dislocation, both economically and professionally. The trend toward specialization had gained an increasing velocity, even before the war. At the conclusion of the war this trend appears to have gained a new momentum. Whether this is permanent or whether this trend is to be viewed with alarm is not entirely clear, but it is quite clear that a very large section of the medical profession, both locally and throughout the country, have rather suddenly become alarmed, piqued, irritated, or infuriated at a situation for which they themselves do not feel any major responsibilty. They now propose to do something about it.

The factors which have contributed to the unrest are manifold but can be grouped under two main headings: loss of security; loss of prestige. These factors have been ably presented in a number of articles occurring in the literature and need not be dwelt on at length. Briefly enumerated under the first heading, loss of security, I would list first and foremost, fear of restriction of hospital privileges; second, exclusion from participation on equal basis with the specialists in many government-sponsored health projects; third, loss of replacements from medical schools and desertion from the ranks by general practitioners who become specialists.

Under the second classification—loss of prestige—I refer to the transition, especially in urban areas, from the beloved family physician of former years to merely a general practitioner who is rated fourth choice in the EMIC program, to the *lèse majesté* of making solitary rounds at the hospital while the specialist confrere leads a large entourage of residents and interns through the corridors, to the humiliation of being called for minor cuts and abrasions and temperatures under 100, only to be replaced by the specialist when the family really becomes alarmed. These factors and many others, some more real than others, tend to drive our Society into two separate camps if for no other reason than community of interest and self-protection.

Unfortunately, the threatened division comes at a time when we can least afford to have our house divided. We are engaged at this time in a struggle for the very existence of freedom of practice. Through the combined efforts of all branches of organized medicine, spearheaded by the National Physicians Committee, we have made a good showing in the hearings on the Wagner-Murray-Dingle Bill. It is only the first skirmish. It is really only a preliminary to other battles.

It is the considered view of those who are most active in our defense that the pressure for State Medicine will continue, will alter its attack, and if thwarted in the whole, will seek to attain its end piecemeal by putting over such measures as the Pepper Bill, which is a very large chunk of State Medicine indeed.

While we can hardly blame the proponents of socialized medicine as the cause of this threatened split in our ranks, they are nonetheless clever and quite capable of utilizing it to undermine our solidarity. Such irritations as the EMIC "blue book," the proposed discrimination between general practitioners embodied in the Pepper Bill, and even efforts to force the adoption of a double fee schedule for the Veterans Administration, one for general practitioners and one for specialists, all emanate from Washington. If we allow ourselves to be divided into two large camps, our battle for survival is lost. We will all end up under government control, and the group which will suffer most will be the general practitioners. How can you doubt it? Has not Washington made this abundantly clear?

It is not my purpose tonight to try to solve the tremendous problems which have been suggested above. It is my hope to persuade you that it is to our common interest to so arrange our house that we can live together and help one another, rather than to allow a deep schism to crack open our Society. It is my feeling that while the problems presented above can only be solved on a very broad, even national basis, the irritations, frictions, antagonisms and fears which are creating tension between us can be largely allayed on a local basis. It is my purpose, therefore, to examine into these fears and irritations, to try to distinguish between what is real and what is imagined, to point out what the general practitioner holds against a specialist, and the specialist against the general practitioner, to assess a little blame if blame seems to be obvious. In fact, this is a family council where some dirty linen is to be washed in the hope of easing tension and cooling tempers. We would all really like each other very much—if only the other fellow would behave.

Never having been a general practitioner myself, I realize that I may be incapable of viewing this problem entirely dispassionately. My only excuse for giving such a talk on an occasion of a presidential address, which usually implies an address of great dignity, is the feeling that the situation cannot be ignored, and if not dealt with promptly and effectively, may create irreparable damage to our Society. I hope that six years on the Board of Directors and one year as President has given me a certain objectivity to offset my lack of experience as a general practitioner. Certainly I have cornered every general practitioner of my acquaintance in the last few months, trying to get his point of view. In fact, I suspect that a great many of you may have already heard this speech at least in part. Incidentally, if you note a few bulging hips among you, they are not flasks. I have asked a few of my friends to provide themselves with short lengths of lead pipe to help get me out of here if my remarks prove too offensive.

The most frequently expressed fear of the general practitioner, especially in urban areas, is that he may be deprived of hospital privileges because of a change of policy on the part of the lay hospital boards. It is feared that hospitals are becoming so departmentalized that there will be no place for the general practitioners. I have never felt that this fear was well grounded. It is certainly not likely to occur at a time when hospitals are overcrowded and when displaced staff men would have difficulty in finding a new hospital home. Furthermore, it has been my feeling that most hospital board members appreciate the need for and the contributions of general practitioners. To confirm my conviction in this regard, and to offer reassurance to our general practitioners, I have sent personal letters to the chairmen of the lay boards of each of the Minneapolis Hospitals. I have asked two questions:

1. I would like to know whether your board contemplates any change in staff setup which would displace general practitioners who are now staff members?

Presidential Address presented before the Hennepin County Medical Society at its annual meeting, October 7, 1946. Reprinted from *The Bulletin of the Hennepin County Medical Society*, October, 1946.

2. I would like to know whether, when members are added to your hospital staff, general practitioners are to be excluded and only specialists admitted?

Responses were received from six hospitals—Asbury, Abbott, Deaconess, Eitel, Northwestern and St. Barnabas. The answers to the above two questions in each case were unequivocally, "No." Three hospitals—Swedish, Fairview and St. Andrews have not responded by letter, but prior to this talk, I was in communication by phone with the heads of each of the lay boards, and they have stated that letters are on the way; and again in each case they have answered "No" to the above questions. Some of the letters went considerably further than merely answering my questions, expressing themselves in such a way as to indicate high appreciation on the part of the lay board members for the general practitioners. I am going to read two of them. The first is from the Northwestern Hospital:

"Dear Dr. Campbell: In answer to your letter of September 17 which has just reached me due to my absence from town, I am very glad to tell you that the answer to both of your questions is 'No.'

"I brought the matter to the attention of the Executive Committee this morning, and also to the attention of Dr. Platou, our Chief of Staff, and they concurred with me in telling you that we have not passed any rules which discriminate against general practitioners in our hospital nor is it our intention to do so.

"We have a number of general practitioners on our active staff and we have recently taken on our associate staff several new men in this field. We believe there is a definite need for general practitioners in the field of medicine. I hope this will allay the fears among this group.

"With kindest regards, I am, Sincerely, MRS. F. PEAVEY HEFFELFINGER, *President, Board of Trustees.*"

The second letter which I wish to read is one from Mr. Bolles Rogers of the St. Barnabas Hospital Board. Here, perhaps more than in any of the hospitals, apprehension has been felt on the part of the general practitioners that they might find themselves without staff connection in the near future. I believe this letter will settle all doubts in our minds in this respect:

"Dear Dr. Campbell: The contents of your letter of the 17th have been read with much interest. It is very difficult to believe that there can be any fundamental disagreements between groups of physicians because of rivalries originating within the branches of the medical profession. The adequate care of the sick is of primary importance and all branches of medical science are equally important in accomplishing this end.

"The Board of Trustees of St. Barnabas Hospital have increasingly felt their responsibility in seeing that patients who are brought to the hospital are assured of the best possible care and the safeguarding of their health. Plans are proceeding to establish increasingly high standards of care and practice over a period of time which will still further insure this end. Nothing could seem more short-sighted to the Trustees of St. Barnabas Hospital than that any discrimination should be made among the classifications of doctors using our facilities.

"Answering your specific questions:

"(1) Whether the Board contemplates any change in staff setup which would displace general practitioners who are now staff members. On behalf of the Board, I should like to answer, 'Categorically No' to this question. The Board has asked the general practitioners using our facilities to set up standards themselves which beyond peradventure of a doubt would insure for their patients every safeguard. It is my understanding that the specialists have already defined their particular fields of practice, but that general practitioners have never established a yardstick for measuring the boundaries of their practice of medicine and surgery. It is the belief of the Trustees that the adoption of such a measure, originating from the general practitioners themselves, would be a forward step in medical practice which could easily establish a pattern for all doctors in the United States classified as general practitioners. A clearly defined statement to this end should greatly enhance the prestige of the general practitioner in the eyes of the public. There is no thought of removal by Board action of any classification of doctors from the staff of St. Barnabas Hospital.

"(2) Whether, when new members are added to our hospital staff, general practitioners are to be excluded and only specialists admitted. The answer is again, 'Categorically No.' The Board of Trustees of St. Barnabas Hospital not only greatly esteems the work of the general practitioner, but would feel that the hospital would most inadequately serve the general needs of the public were there not a substantial number of general practitioners on its staff. It is our firm belief that for many years to come, if not for all time, the general practitioner will continue to be the cornerstone of the practice of medicine. St. Barnabas welcomes all general practitioners whose ethical approach to their work measures up to the high standards which have been set in the operation and management of the hospital. In our opinion, it would be a major tragedy for general practitioners to feel that there was any discrimination against them at our hospital.

"I sincerely hope that any misunderstandings which might have arisen in this connection may be speedily dissipated, and that general practitioners will realize that they are welcome on the same basis of integrity and capability as are the specialists.

"The threat of socialized medicine is very real, and in our opinion, no classification among doctors would be so seriously injured as the general practitioner. The establishment of government clinics would not work to the advantage of the general practitioner. I wish to commend you, sir, for the sincere and intelligent effort which you are making to hold together in Hennepin County representatives of the various groups of the medical profession in order that they may present a united front against the encroachments of regimenting government agencies. Sincerely yours, CHARLES BOLLES ROGERS, *President.*"

It is very obvious that any fears which may be held by general practitioners that they may not be able to hospitalize their patients are groundless, and that there will be no change in this policy as long as there are established general practitioners in the city of Minneapolis. I am sure that any threat to this promise would be as vigorously opposed by specialists as it would be by general practitioners.

Under the general heading of restricted hospital privileges there is another very serious source of friction. I refer to the restriction of operative privileges. To the best of my knowledge, each of the Minneapolis Hospitals has restricted the privileges of performing surgery to those of their membership who in the judgment of the surgical staff are competent to perform surgery. Automatically admitted to full privileges are members of the two licensing boards, the American Board of Surgery, and the American College of Surgeons. To this are added those men without certification who can nevertheless satisfy the staff of their competence. As a result, there have been a few men who have been restricted and whose operative privileges have been curtailed. This cuts deeply and cuts where it hurst most, in the pocketbook.

Organized medicine must walk the rather narrow path between, seeming to ignore the rights of some of its members on the one hand, or, on the other hand, supporting a retrograde step which is against the best interests of the public which would jeojardize the protection of the public, and which would classify medical men in the minds of the public as mercenary. The following general principles seem self-evident:

At the present time the only place where the quality of medical practice can be controlled is at the staff level. Each staff has the moral obligation to protect the general public against incompetence. Each staff has the good name and reputation of medicine to support before the public. I am sure that there are many here who have had the same agonizing experience as I have had of watching some grossly incompetent man betray the trust of a patient who has submitted to his unskilled surgery, and who have walked out of an operating room as I have, with a feeling of shame and humiliation that I belonged to a society which would tolerate such a practice.

It is right and it is necessary to control operating-room privileges. At the same time it must be conceded that such control is capable of abuse. Personal enmities or jealousies make it necessary that each staff consider its actions carefully to prevent injustices. It should be pointed out that formal surgical training need not be a prerequisite to surgical competence, and that regardless of how a man has achieved proficiency, his proficiency should be recognized.

Periodically, likewise, a staff should review its lists making such additions as may be justified by additional training and experience. In the future it is a reasonable expectation that surgical competence will not be achieved at the expense of the patient but rather through formal training, through assistanceships or preceptorships.

While we are on the subject of hospitals, it might be well to point out that the present crowded conditions and the difficulty in obtaining beds for our patients has made us all hypersensitive and suspicious that our fellow practitioners are receiving preferential treatment. I have heard the claim that general practitioners are discriminated against and that specialists get beds without difficulty. I can answer from personal experience that this simply is not so. I hope that within the next year or two sufficient new beds may be added to reduce the pressure so that we will not look at our confreres and think there goes the so-and-so who sends in fake emergencies, or who has a drag in the office by which he gets his patients in when we cannot obtain beds for our own patients.

A very genuine fear of the general practitioner, and, in my opinion of much more real concern, is the problem of lack of replacements. Unquestionably, fewer of our graduates in medicine are choosing the field of general practice. If this trend continues, the question is raised as to how whole communities can get along. I do not believe it is a matter of great concern for the urban areas, but for rural areas it is indeed a real and serious matter. I have in mind that in an urban area more and more internists will be trained, will be taught that they must make house calls, and in general, to take the place, as far as possible, of the old family physician. Because some of you may not agree with me that even an urban area can get along without general practitioners, and because many of you are greatly concerned about the trend, I wish to dwell for a short time on the part which medical education plays and will continue to play in determining the choice of students toward specialization.

The accusation has been seriously advanced here in Minnesota, that the Medical School actually discourages students from becoming general practitioners. I do not know whether this represents the predominant feeling of the general practitioners of the State or only the most vocal and aggressive; nor do I know whether this group accused the Medical School of deliberately planning, of going out of its way, to discourage medical students from going into general practice. To find out what the true facts are and what the Dean's office had to say in this regard, I recently spent some time with Dr. Diehl and his assistant, Dr. Weaver. I learned that Dr. Diehl is acutely conscious of the Medical School's responsibility in furnishing practitioners for the State, and, far from making a deliberate effort to encourage specialization, the School is casting about for ways and means by which those with a natural aptitude or interest for general practice may be encouraged. At the present time, two semesters of two hours each per week are devoted, in a crowded curriculum, to a subject called orientation in practice. Here where the subjects generally included under the art rather than the science of medicine are covered, an effort is made to fire the imagination of those students to whom the family doctor relationship to his patient has a strong appeal, and to those who are interested in finding the greatest opportunity for rendering service. Even greater emphasis is planned in the immediate future when outstanding general practitioners throughout the state are to be invited to address the classes, picturing the advantages, the pleasures, and the satisfactions which go with being a good family doctor.

For the past three years, Dr. Weaver has conducted a survey among Senior students in an effort to determine student objectives. Over this three-year period, the answers to the various questions have remained remarkably consistent. For example, while 75 per cent of the class has indicated an interest in obtaining board certification as specialists, 25 per cent have indicated an interest in postgraduate work for a period insufficient to obtain training as a specialist. In other words, for the past three years, one-quarter of the class did not plan on specialization.

Dr. Diehl estimates that despite the interest of 75 per cent of the class in obtaining specialist recognition, lack of facilities will prevent all but a small part of this group from achieving their objective. Dr. Diehl estimates that for a while at least, 75 per cent of the graduating class will still enter general practice. Whether his estimate is correct or whether only 50 per cent enter the field of general practice, it is still obvious that the supply is not going to be cut off immediately.

As further exoneration of our Medical School for responsibility for student interest in specialization, I would cite the latest questionnaire which was sent out by Dr. Weaver, this time to incoming Freshmen. Surprisingly, there was not more than a 5 per cent deviation from the answers given by Seniors. In other words, medical students already have made up their minds as to how they wish to practice by the time they reach Medical School.

In order to get a better idea of how medical students arrive at a decision to specialize, or to go into general practice, to learn what factors influence this decision, I recently had lunch with a group of twenty or more boys from the Medical School. I asked these boys to drop me a note indicating in general their background, their year in school, whether they had decided on the type of practice they wished, and what factors determined that decision. The answers were revealing, intelligent, and showed a surprisingly well-thoughtout analysis of the present and probable future situation. I received replies from eighteen. Nine had made up their minds that they wished to specialize. These decisions had been made before entering medical college for the most part and the Medical School had not influenced their decisions. Five wished to specialize and thought that the School had influenced their decision, although no one felt that the School was going out of its way to do so. It was a natural result of the type of training they were receiving. Two were undecided and two had made up their minds that they were going into general practice. I would like to read the replies of the two who are going into general practice:

> "I intend to become a general practitioner probably because of my background. I came from a rural area and appreciate the definite need in these areas for good general practitioners. I'm not afraid of either being driven out by the specialist, nor am I afraid of starving to death. I feel that the University is *pushing* men into specialties! I don't believe there is need for greater than 25 per cent specialists."
>
> "As far as my plans go at this time I think I will do general practice. This is primarily because I do not like to live in a big city and prefer to work independently. Since I am quite young, I may seek further training in internal medicine or pediatrics in the form of a residency before I go out. I am now a Junior and come from a farm."

I think that it is significant that these boys both came from rural areas. I believe there is a fertile field to investigate further when trying to devise ways and means of obtaining general practitioners for rural communities. I wish to read in addition a letter from a Sophomore who had not made up his mind as to his type of practice. The letter is fairly representative of the way most medical students regard their training.

> "If it is financially possible for me to study for some specialty, I shall probably do it for the following reasons:
>
> "Our instruction in medicine is given by specialists in their field, and I am impressed by the enormous body of knowledge which these men state we must have before doing a really good job in that field of medical practice. Realizing the limitations of time and ability of a single physician in achieving a real proficiency in even one specialty, the enormity of the task of setting oneself in the position of the general practitioner who is supposed to have a comprehensive knowledge in all fields with equal responsibility in all fields, is difficult. Knowing the fact that a specialist in a given field can usually do more for your patient than you as a general practitioner can do, it is really a duty to refer your patients to these men, leaving you to bandage fingers and remove dust particles from the eye. I realize the need for the general practitioner in the small communities in this country, but the prospect of having the complete medical responsibility for a community, in the realization of your own inadequacy, is not a reassuring one. The only way that I could go into a community as a general practitioner would be to grit my teeth and just simply do the best I could knowing my limitations—but defining your limitations while out

of contact with the teaching institutions and clinics where new and better techniques are constantly developed, is not easy. I may say finally that in all probability I will go into private practice as a general physician but not without the misgivings and apprehension as stated above."

To accomplish my purpose in this talk, namely, to help reduce tension by bringing into the open many sources of friction, I cannot hew entirely to consideration of broad principles such as we have been discussing above. I believe that I must go a little deeper under the surface and air complaints which have as their basis human frailties such as selfishness, thoughtlessness, egotism and other human weaknesses. Let us see if we can outline the major complaints which each group holds toward the other:

First, let us consider the general practitioner. What personal grievances does he hold toward the specialists as a group?

The general practitioner complains that the specialist grabs the case. In the case of the internist, he simply takes over, manages the case, directs therapy and deals with the family, leaving the general practitioner with nothing to do except to shift from one foot to the other and look unnecessary. In the case of the surgeon, he either takes over the case in whole, squeezing the general practitioner out of the picture, or does not adjust his fee to permit the general practitioner to make a charge of his own.

With respect to the internist, let the specialist remember to serve in the capacity of a consultant and let him work through the general practitioner. To the busy internist, it would be easier to assume the whole responsibilty but not conducive to harmony professionally. It is worth an extra effort on his part to keep the family doctor in the picture. Most times he will find that the general practitioner is truly the family doctor and can better represent the problem to both patient and family than can the specialist alone.

In regard to the second complaint that surgeons do not protect the general practitioner as far as his fee is concerned, let the Surgical Society as a group consider this situation and establish some criteria of a proper relationship. Frankly, I was astonished to find that some surgeons will not operate with the referring general practitioner but insist on taking over the whole case. Time will not permit me to go into the problem to any great extent, but I will merely state that in my own opinion it is incumbent upon the surgeons of Minneapolis to see that the general practitioner does stay on the case, does participate in the case, and does make a reasonable charge for the service. By so doing, surgeons will withdraw the temptation for a general practitioner to overstep the boundary of his own ability. If faced with the loss of the entire fee, it is only human for the general practitioner to wonder whether he might get away with the surgery himself. This does not involve fee splitting since in every case the patient must be informed as to where his money is going. The justification of such charge by the referring general practitioner must be obvious to the patient, and it is the surgeon's duty to see that the patient understands the contribution of the general practitioner. If the patient does not accept the charge, then the whole system breaks down. We cannot insist on any fee arrangement, however reasonable and desirable from our point of view, if it antagonizes the public.

Another source of irritation to the general practitioner is the fact that the specialist does not adhere to his specialty but does general practice. This is perhaps the greatest "gripe" of the general practitioner. "Specialist? Show me one!" Thus did a general practitioner acquaintance of mine greet my referring to a group of specialists. I did succeed in pointing out a few to him and we compromised on the fact that there probably are a few men who are really adhering to their specialty. This problem is not so much a question of ethics but of good manners and a sense of fitness of things. To me, there would be complete loss of dignity to represent myself as a specialist, by accepting referred work, and then to take general practice merely because it found its way into my office. Such behavior would imply greater concern for dollars than for the dignity and respect for the specialty. Let every man who is qualified as a specialist meet and settle his own problem and make a final decision as to whether or not he is going to confine his work to a specialty or do general practice. If he decides in favor of general practice, well and good, but let him be frank and classify himself as a general practitioner. Let him cease being a source of embarrassment to others in his field who are truly specialists. Let him cease putting a strain on the general practitioner-specialist relationship. Let hospital staffs refuse to classify as a specialist even those who are certified unless they do restrict their work.

A certain amount of overlapping of fields is, of course, necessary for good public relations. It is important that we do not make snap judgments about our specialist confreres. If the internist cannot lance a boil or a surgeon prescribe for a cold, incident to work in his own field, specialization has gone to absurd lengths and we will only succeed in antagonizing the public. As specialization by certification grows, and specialization by self-declaration fades, there will be fewer causes to complain that specialists are not confining themselves to their fields.

Another general practitioner's complaint is that the specialist, even though he has gained recognition by belonging to one of the colleges, is nevertheless no more competent and oftimes does poorer work than general practitioners who make no pretense of being specialists. Unfortunately, in a few cases, this is true. However, it is water over the dam. Admittedly, in the case of the American College of Surgeons with which I am most familiar, the standards were let down over a period of years. Many men throughout the country were granted membership who could not pass the test today. The standards of the College have been raised. Dr. McEachron told me, personally, that the American College of Surgeons had turned down over 100 applicants last year who are already holders of certification by the American Board of Surgery. Application was refused on the basis of lack of experience.

Indicative of the extreme degree of allergy generated toward the specialists, I was told by several general practitioners that the specialists were "high hat" that, working in the same hospital year after year, some of the specialists hardly speak to them and have nothing to do with them socially. This I find hard to believe or understand, but I would suggest that if there are any specialists whose egos require that supreme degree of isolation where only the privileged may know them and speak to them, the dictates of human kindness suggest that they be given isolation so splendid and complete that a little friendliness and social intercourse may finally appeal to them.

There are other complaints which time will prevent me taking up at any great length. The general practitioner complains that he cannot get consultation without long delay. The specialist, of course, has been busy and probably will be busy. Why not give the referred case from a general practitioner a little priority with respect to his own private patients for the sake of good relationships? Another complaint: the specialist is losing the personal touch. The general practitioners state that their patients return from the specialist with the feeling that the specialist had never seen them at all—only that small part of their anatomy for which they were referred to him. Let the specialist remember the patients like to have some personal interest in them. They do not like to be considered "cases" or problems.

Let us now examine why the specialists complain of the general practitioners. Frankly, the specialist "ain't mad at nobody." Why should he be? His security is not threatened except by socialized medicine.

The only two major complaints which I have been able to detect among the specialists were listed by

Thompson in an article in the June 6 JAMA. First, a failure to distinguish between the trivial and the serious. Second, failure to observe the limitations of his training. These are accusations which may be leveled at a very small percentage of the general practitioners. But there is a tendency to damn the whole group for the sins of the few. The first, failure to distinguish between the trivial and the serious, can only be due to carelessness, indifference, or incompetence. The second is a matter of integrity and intellectual honesty. That this matter cannot be safely entrusted to the practitioner alone, is attested to by the fact that hospitals have found it necessary to control operating room privileges. I would say that in general my conversation on this subject with varied specialists of my acquaintance indicates no animosity towards general practitioners as a group. In fact, I believe that the specialists are behind me in my efforts to support the just claims of the gneral practitioners and I know of none who would knowingly put obstacles in their pathway.

There has been formed very recently a new organization of general practitioners called the American College of Physicians and Surgeons. I would like to make some remarks about this organization in all kindness and sympathy. To begin with, I feel that such an organization is desirable and needed. I cannot understand why it has not existed before. I understand that similar organizations are developing in other parts of the country. Properly managed, with wholesome objectives, this organization will be a distinct help to the general practitioners and to the Society as a whole. Should this organization degenerate into a purely selfish movement using pressure tactics, it is capable of splitting organized medicine completely into two camps with mutual suspicion and disrespect.

Such an organization could develop along three somewhat separate lines:

It could be wholly idealistic and too proud to deal with sordid matters of economics and personal income, a line which we would all readily agree would be silly and futile. It could swing far in the opposite direction, being bombastic, aggressive, purely selfish and totally inconsiderate of the needs and welfare of medicine as a whole. Or it could take the middle course, in which it most logically could concern itself about the financial welfare of its members and still be constructive and stand up well before public inspection, if the glare of publicity were ever thrown upon it.

It is along this middle line that I am hopeful that the local chapter of American College of Physicians and Surgeons will develop. I have urged every general practitioner of my acquaintance to join this group feeling that if it embraces most of the general practitioners in our Society, it naturally will be well run and remain on good solid ground. If it is joined only by those who feel that they have an axe to grind, it will not only fail in its objective but will render us all a great disservice.

Frankly, I was upset at the tenor of the letter which was circulated, soliciting membership. It seemed to me that the letter radiated rancor and ill will. I feel that any society based on rancor and ill will is doomed to failure. In the consitiution and by-laws of this organization I feel that, from the standpoint of public and professional relations, a constructive program for betterment of the general practitioners and betterment of the care which they render to the public, could have been more clearly stated. I am afraid that the average layman looking over the constitution and by-laws may see only the dollar sign behind it.

Under the by-laws in the section referring to membership, a mechanism is set up whereby any general practitioner member of this organization may establish himself in any one of seventeen specialties, including chiropody. I am asking if a layman might not consider this as definitely subversive toward the interests of the public, might not think that this amounts to specialization by self-declaration. It is not to be construed, from my remarks, that a general practitioner who has obtained the qualification necessary for him to center an interest in any of these special groups should not be permitted to do so, but why establish the mechanism of such a pseudo certification?

I feel that there are many ways in which this new society may do something constructive for the general practitioner. For example, I have long felt that there is a need in hospitals for some standard other than specialist standards by which the performance of general practitioners may be judged. Why not have a committee of general practitioners in each hospital to supervise the work of other general practitioners, to, in a fashion, establish a standard of competence by which work may be judged? I believe that such a committee would have a positive effect on laggard and unprogressive men who are not giving the patient the benefit of the best available treatment. Under the present system, no one checks the laggard. No specialist considers it seemly to ask him to toe the line, but if he knows that his work is under the surveillance of members of his own group, he is likely to bestir himself and to keep abreast of the times.

Since we are all concerned about the decreasing number of graduates who are going into general practice, let the new society interest itself in finding out where its best material comes from. I would suggest that the man who would make the best family doctor in a rural community is a man who originally came from a rural community. Let the society go into the high schools and into rural communities before these boys have made up their minds that they wish to become specialists. Let them indoctrinate this group with the opportunity for a life of service and a place of admiration and respect in the community. Let this group consult with Dr. Diehl who, I can assure you, will be sympathetic and cooperative in devising ways and means of maintaining a student interest in general practice while he goes through medical school.

Let this group consider the feasibility of establishing preceptorships, especially in rural communities where general practitioners of outstanding accomplishment can take a boy at the end of his rotating internship, or whatever his period of training may be, and teach him how to handle a general practice. Finally, let this group concern themselves with the education of its membership. It has been my observation that the best general practitioners are found in rural communities. They have no one to lean upon. They must read, study, go to meetings, and keep abreast of the times. It is possible for a general practitioner in an urban area to slide along doing the obvious, and whenever he gets into trouble, call for readily available help.

A fine general practitioner is in my mind a better man and a man who has accomplished more than many a good specialist. He must have more information at hand than the specialist. He must read and study constantly. He cannot coast on what he knows.

Before leaving the subject, I would like to point out where the general practitioner's strength really lies. It lies in his position as family doctor. The public, or at least a very large share of the public, still demands a family doctor, one to whom it may take all of its medical problems. The public resents the necessity of making its own diagnosis before it can select a specialist. It resents being passed through many hands for what it considers a simple problem.

In my opinion, the general practitioners' society has missed a golden opportunity. They should have called themselves the "Academy of Family Physicians." There is where the general practitioner's real strength lies. There is where he can go for support, if his existence is ever threatened. In every other respect, in competition with the specialist, he is at a disadvantage.

In conclusion, I wish to point out that we are all here together practicing in Minneapolis; and there is little

(Continued on Page 1281)

CLINICAL-PATHOLOGICAL CONFERENCES

AIR EMBOLISM

Report of Two Cases

HAROLD H. JOFFE, M.D., and ARTHUR H. WELLS, M.D.
Duluth, Minnesota

Dr. A. H. Wells: We wish briefly to present two fatal cases of air embolism, neither of which could have been recognized clinically. Dr. Joffe will give you his interpretation of the literature on this and related subjects.

Case Presentations

Dr. F. H. Dickson: A white man, seventy-six years old was admitted to the hospital one month before his death complaining primarily of difficulty in breathing. He had been bedridden for some weeks because of a chronic bronchitis. The difficulty in breathing was associated with a non-productive cough and swelling of the ankles but no chest pain. Physical examination revealed an acutely ill patient, perspiring profusely and with a respiratory rate of 30 per minute. His blood pressure was 160/100 and his heart was fibrillating at 120 per minute. The lungs were emphysematous throughout with numerous sticky râles and expiratory wheezes, but there was no physical evidence of consolidation at the time of admission. There was a grade I pitting edema of both ankles. The white blood cell count was 55,000 with 92 per cent neutrophiles, and the red blood cell count was 4,000,000 with 13 grams of hemoglobin. The blood urea nitrogen was 13 milligrams per cent. An x-ray picture of the chest was interpreted as revealing a cardiac enlargement and bronchopneumonia. In addition to supportive therapy, the patient received x-ray over the lungs, penicillin, and sulfadiazine to a level of 6.7 milligrams per cent. In spite of the therapy, the patient tended to run a low grade fever, never over 101°F. There was some mild improvement followed by a general downhill course with the white blood cell count gradually falling to 12,000 and the hemoglobin to 10.5 grams. He had a most severe attack of coughing beginning about two hours prior to his unexpected death.

Dr. A. H. Wells: At the necropsy performed two hours after death, pleural cavities were found completely obliterated by adhesions, except for a small area on the anterior aspect at the apex of the left lung. There was an extensive accumulation of small bubbles of gas throughout the soft tissues in the anterior mediastinum, extending into the hilar area of the left lung and into a pneumothorax over the left upper lobe. There was no hemorrhage in this region. Both lungs had extensive nodular consolidation, and later microscopic examination revealed much fibroblastic organization of the exudate. There was also considerable acute and chronic inflammatory change in bronchi. In situ, there was a severe distension of the right auricle and ventricle due to gas and many tiny bubbles of gas and blood. The gas hissed as it escaped from a small opening in the right auricle. It was primarily present in its natural form. The right ventricle also contained about 15 c.c. of frothy blood clot. The right auricle also contained an old mural thrombus in its tip measuring 1 cm. in diameter. The blood in the cavities of the left side of the heart was mostly clotted and had no gas or bubbles. The coronary arteries had a mild atherosclerosis without narrowing of their lumina. Final Diagnosis:

1. Hypertensive cardiovascular disease
    - (a) Cardiac hypertrophy (440 grams)
    - (b) Chronic congestive heart failure
    - (c) General anasarca
    - (d) Chronic passive congestion of lungs, liver, spleen, and kidneys
    - (e) Auricular fibrillation (clinical)
2. Unresolved bronchopneumonia
    - (a) Pulmonary emphysema
    - (b) Pneumothorax and mediastinal emphysema
    - (c) Air embolism to right side of heart (immediate cause of death)
3. Chronic bronchitis

Dr. S. E. Urberg: The second case is that of a colored woman, fifty-eight years old, admitted on December 31, 1945 for symptoms of intestinal obstruction. On January 14, 1946 a resection of a gangrenous portion of the small bowel, enteroenterostomy and colostomy were performed for an intestinal obstruction due to strangulation of an internal hernia. At the time of the surgery the entire intestinal tract was found to be matted together by adhesions which were apparently due to an operation twenty-two years ago for some pelvic condition. The patient had a rather stormy convalescence and was discharged in good condition on February 9. She was readmitted on June 2 for extra-peritoneal closure of the colostomy. There was a long-standing history of hypertension with a minor previous cerebral vascular accident. The blood pressure on this admission was 210/120. She was taken to the operating room on June 4, but the surgery was postponed because of a moderately hard coughing spell during the administration of a spinal anaesthesia as-

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From the Department of Pathology of St. Luke's Hospital, Duluth, Minnesota. Clerical Assistance by Miss Faith Gugler.

sociated with râles in the chest. Closure of the colostomy was performed on June 6 under spinal anaesthesia. Because the blood pressure fell from 160/100 to 95/70, the patient was kept in the operating room and nasal oxygen was given for over a one and one-half hour period postoperatively. She was then returned to her room with a weak and thready pulse, poor respirations, and expired approximately five minutes later.

Dr. H. H. Joffe: Necropsy examination performed two hours after death showed the right ventricle to be slightly dilated and the right auricle appeared about twice its normal size. In situ, it felt as if it were distended under pressure. The pulmonary artery was unusually prominent and tense. Incision into the pulmonary artery produced an expulsion of air with a high pitched whistling tone followed by distinctly frothy blood. There remained about 20 c.c. of frothy blood in the right ventricle. The left side of the heart contained no gas or bubbles. The coronary arteries had a grade I atherosclerosis with no narrowing of their lumina. Hypertrophy of the left ventricle accounted for the mild cardiac enlargement (430 grams). The lungs had a grade II emphysema in their upper lobes with atelectasis of the dependent portions. There was no interstitial emphysema. The portal vein was distended and tense. When opened, distinctly frothy blood was expelled. There was no pneumoperitoneum and no evidence that the peritoneal cavity had been entered during the operative procedure for closure of the colostomy.

Final Diagnosis:

1. Air embolism (immediate cause of death, source undetermined)
2. Hypertensive cardiovascular renal disease
   - (a) Cardiac hypertrophy (430 grams)
   - (b) Coronary sclerosis, grade I
   - (c) Arteriolar sclerosis of kidneys, grade III
   - (d) Pulmonary atelectasis
3. Emphysema, grade II
4. Leiomyoma of uterus
5. Intestinal adhesions (severe and diffuse)
6. Recent closure of colostomy

Discussion

Dr. A. H. Wells: We feel that the first patient presented ruptured lung tissue during his seizure of coughing. Air escaped into interstitial tissues, mediastinum, and pleural cavity, building up pressure until it forced its way into a torn vein. The patient's auricular fibrillation very likely aided in the accumulation of air in the right auricle. We do not know the source of the air embolus in the second case. Apparently the intravenous glucose therapy which was started at the onset of the operation was not at fault. However, we have no personal knowledge of this.

Dr. H. H. Joffe: Air embolism, according to Martland,[10] is the result of the entrance of air into the venous circulation or occasionally the systemic circulation with consequent blockage of the heart and the pulmonary circulation or the cerebral or coronary circulation. Blockage of vessels in other locations, since no disastrous results ensue, are of no practical significance.

Etiology

The etiologic factors in the production of air embolus are many and the following list, although incomplete, clearly illustrates the diversity of procedures and conditions which may prove fatal by this means. Basically they all depend upon the entrance of a sufficient amount of air into the circulation in a relatively short time.

1. At the time of the commonly used intravenous fluid therapy.
2. During blood donations where strong positive pressure may develop in the closed donor set.[15]
3. From wounds or operations of the head, especially those in which the dural sinuses are injured.[10]
4. With deep sea diving where the diver holds his breath during ascent.[6,16]
5. In immersion blasts.[7]
6. In lavage of the nasal sinuses where air under pressure is blown through an antrum.[14]
7. From wounds and operations in the neck and upper chest.[10]
8. With injection of air into the bladder for diagnostic aerograms.[11]
9. At the time of criminal abortions where air and fluid are injected directly into the uterine cavity.[10]
10. In obstetrics, especially at the delivery of a placenta previa.[1]
11. In other diagnostic and therapeutic procedures including:
    - (a) patency test of the fallopian tubes[4]
    - (b) intravaginal insufflations[1]
    - (c) transuterine pneumoperitoneum, especially if attempted near menstruation or after a curettement
    - (d) direct intraperitoneal pneumoroentgenography
    - (e) artificial pneumothoraces[8]
    - (f) air insufflation in the region of the adrenals for x-ray visualization of adrenal tumors[17]

Pathologic Physiology

The amount of air necessary to produce death in experimental animals varies with the investigators. As little as 8 c.c. of air per kilogram body weight can be fatal if injected intravenously in dogs within twenty to thirty seconds.[2] We have killed hundreds of rabbits in this laboratory by routinely injecting 10 c.c. of air in a marginal vein of the ear. Richardson and coworkers found that large amounts at the rate of 0.12 c.c. per kilogram body weight were tolerated well with one animal receiving 1,377 c.c. of air in 460 minutes without serious consequence.[2] Wolffe and Robertson concluded that the lethal dose was 0.25 c.c. per pound body weight.[12] Richardson, Coles, and Hall were able to inject into the femoral vein of a dog 3,910 c.c. of air at a slow rate over a period of eighty-seven hours before death occurred.[12] Very small amounts, 1 c.c. injected into a pulmonary vein are uniformly fatal and death results solely from coronary artery obstruction. The position of the animal did not prevent either coronary occlusion or cerebral air emboli.[9]

In transposing the results of animal experimentation to humans, it is generally accepted that large quantities of air must enter the circulation in a relatively short period of time to produce fatal results. A liter of oxygen has been injected into man in a period of an hour without serious results. One should keep in mind that oxygen is more readily absorbed than air which contains only 21 per cent oxygen.[10]

In 1916 Tunnicliffe and Stebbing[18] treated three very ill patients with intravenous oxygen with relief of symptoms. Oxygen used in therapeutic amounts of 200 to 600 c.c. per hour will cause a rise in the low blood pressure as occurs in shock or heart failure with accompanying slowing of the pulse rate and less labored and slower respirations. Thus, the pulse and respiratory rate are the important things to observe during intravenous administration of oxygen.[18]

In man about 10 to 20 c.c. of oxygen per minute (600 to 1,200 c.c. per hour) which is about 10 per cent of the basal requirements can be administered intravenously with beneficial effects.

Early medical literature took no cognizance of air emboli as an entity except in reference to Caisson's disease ("bends"). In this condition the nitrogen of the air is forced into solution in the blood plasma by the increased pressure and comes out of solution upon diminished pressure. If the decompression process is done too rapidly, bubbles of nitrogen form in the blood. The symptoms and signs depend on the location, causing death only when in the brain or coronary arteries. Clinical evidence of an embolus occurs in 95 per cent of cases within three hours after decompression.[13]

In divers, during ascent with the diver holding his breath, the pressure outside of the chest decreases and the intrapulmonic pressure increases due to the expansion of the entrapped air. This in turn produces a marked drop in the pulmonary circulation by compression of the pulmonary vessels, a consequent drop in blood pressure and finally rupture of the lung. Upon surfacing and exhaling, the pulmonary circulation is reestablished, thereby relieving the excess pressure; and air enters the ruptured pulmonary vessels, resulting in aero-embolism.[6]

There are two main varieties of air embolism: pulmonary, which is more frequent and important, and systemic. Circulatory occlusion by air may be fatal in three ways:[5] (1) by obstructing a sufficiently large area of the pulmonary capillary bed to interfere with the transfer of adequate oxygenated blood from the right ventricle to the left auricle, (2) by obstructing one or more branches of the coronary arteries, (3) by rendering ischemic a vital area of the brain. When a large volume of air reaches the right side of the heart in a short period of time, the foamy blood formed is more compressible and less readily expelled with a considerable amount of air remaining after each systole. This acts as a circulatory tampon, blocking the pulmonary circulation, resulting in distention of the right auricle and ventricle with an increased peripheral venous pressure. Death is due to interference with proper ventricular systole.[10]

As a rule, air entering the left side of the heart is rapidly absorbed, producing little or no symptoms unless considerable amounts reach the brain or are caught in the coronary circulation. A patent foramen ovale, although found in 25 per cent of individuals,[10] is physiologically closed by the higher pressure in the left auricle. In shock, however, the pressure in the right side of the heart may approach that of the left with resultant paradoxical embolism. A block of the pulmonary circulation by air embolus could also result in forcing air through the foramen ovale.

The amount of air which may be accidentally introduced during an ordinary intravenous injection should not give rise to clinical symptoms. However, faulty tubing and connections and failure to discontinue the intravenous flow at the proper time may prove fatal by air being sucked in. The ever frequent use of intravenous routes of therapy in general practice is, therefore, not without danger.

A non-fatal case of air embolism[15] was recently reported as the result of the development of positive pressure in the blood receiving bottle. A positive pressure can develop in the blood donor bottles, which are closed intentionally or by accident, in one of two ways: (1) by trapping air over the accumulating blood and compression of it by the venous pressure of the donor vein distal to a tourniquet, (2) by trapping air at room temperature and warming it toward blood heat. The authors[15] feel that the tourniquet on donors' arms is a safety factor tending to prevent air embolism and should never be removed until the needle is withdrawn, especially when something seems to have "gone wrong" with the bleeding. Also, a second vein should never be entered with equipment partly filled from another vein because the development of positive pressure may have been the reason for arrest of the flow.

Clinical Recognition

The signs and symptoms of air embolism are the same as those of other causes of pulmonary embolus. They may be briefly summarized as dyspnea, cyanosis, and pulselessness with death occurring in a few minutes. In comparison, the mode of death in cerebral embolism is usually slow with the patient lingering on for a few days in a stuporous, maniacal, or comatose condition. A clinical picture of pallor, dyspnea, cyanosis and sudden collapse with excruciating retrosternal pain should immediately call one's attention to a fulminating anoxia. The warning signs of coughing up of small amounts of blood, queer feeling, pallor or dizziness, cyanosis, bradycardia, apnea, cardiac irregularities, vomiting and focal neurological signs should be watched for carefully. It is entirely possible that one should hear the air and blood mixing sounds for a few minutes after the embolus. This phenomenon can be heard without a stethoscope in rabbits.

Treatment

Prophylactic measures represent the idealistic approach to this problem. It has been proved by animal experiments[3] that air emboli are vascular irritants which produce two effects similar to those produced by other mechanical, chemical or bacterial irritants. One is a neurovascular, spastic phenomenon, the other a mechanical obstruction to the flow of blood. This being the case, therapy of air emboli must basically include the same principles used in the treatment of other forms of embolism. For the relief of the vasospasm of the pulmonary and coronary arteries the antispasmotics, such as papaverine and aminophyllin, are indicated. We cannot escape from the idea that a simple aspiration of air from the right side of the heart might prove to be a dramatic lifesaving procedure.

Experimental work on rabbits revealed that the serious effects of an air embolism, which was not immediately fatal, were prevented or rapidly alleviated by the prompt administration for several hours of 100 per cent oxygen inhalation which may have some significance in the treatment of certain types of air emboli occurring in humans.[5]

Summary

We have presented two fatal cases of air embolism, one the result of severe coughing with rupture of lung and interstitial emphysema complicating unresolved pneumonia, the other occurring during a simple closure of a colostomy. A list of various diagnostic and therapeutic procedures, also traumatic and disease processes associated with air embolus, has been reviewed.

It is suggested that a large tight syringe and long needle be kept at hand while performing any of the various diagnostic or therapeutic procedures which might result in air embolism. At the first signs of this complication, the right ventricle should be aspirated.

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CASE FOR DIAGNOSIS

A. J. HERTZOG, M.D., and E. J. MARTINSON, M.D.

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DR. DONALD BOHN: This case, A-46-1985, is that of a white man, sixty-two years old, who was admitted to the Minneapolis General Hospital on July 2, 1946, with the chief complaint of swelling of the legs of two months' duration, abdominal swelling for two months and dyspnea for three years. At the age of twenty years, the patient first noted weakness in both legs. The weakness progressed with the development of a marked loss of sensation in both legs. His ankles started to swell for the first time in 1935. In 1937, he had such a marked loss of sensation in his legs and such difficulty in walking that he went to a hospital elsewhere for treatment. A spinal puncture at that time was reported as showing a xanthochromic fluid with increase in the protein content. X-rays of the spine were negative. In 1942, he had an episode of excruciating pain in the left chest that radiated down both arms. This was accompanied by severe dyspnea. He was given nitroglycerine by a physician and confined to bed. In the fall of 1945 he had a similar but more severe attack treated in the same manner. In the past two months, the edema of the ankles increased to involve the upper legs and hips. Abdominal swelling occurred.

Physical examination on admission showed an obese white man in no acute distress. The left pupil was irregular and did not react to light. The right pupil was normal. There were a few crepitant râles noted at the base of each lung. The heart was enlarged to the left. The heart rhythm was regular and the rate was 96 per minute. The abdomen was large with a fluid wave present. The liver and spleen were not palpable. There was marked pitting edema of the entire lower extremities. Complete anesthesia of both legs was present to the level of the first lumbar segment. There was a complete flaccid paralysis of both lower extremities. There was a positive Babinski reflex. The remaining reflexes were absent in the lower extremities but normal in the upper extremities. The patient was incontinent of feces and urine. Venous pressure on admission was 14.5 cm. of citrate. The circulation time was 25 seconds by the fluorescein method from arm to lip. Total plasma proteins were 6.5 grams per cent. Hemoglobin was 86 per cent (Sahli). The leukocyte count varied from 11,500 to 14,800. Urinalysis showed from 1 to 14 leukocytes

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per high power field with occasional to many red blood cells. Spinal fluid examination showed an initial pressure of 75 mm. of water. This rose to 80 mm. with pressure on either or both jugular veins. The fluid was xanthochromic in color and clotted rapidly on standing. The spinal fluid protein was 664 mg. per cent. Serology was negative on both the spinal fluid and blood. X-rays of the spine gave negative findings.

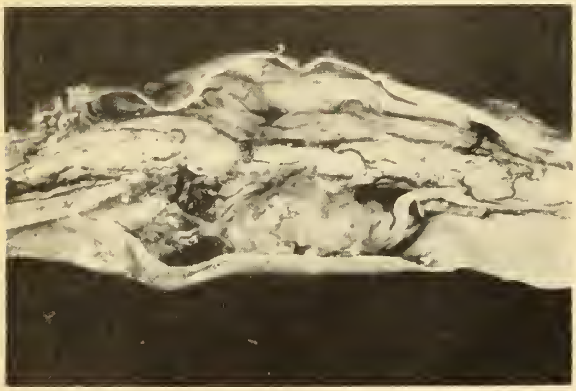

Fig. 1. Photograph, showing spinal cord tumor with compression of cord.

The patient was treated for cardiac decompensation and decubital ulcers of both hips. He was given digitoxin. In four days the venous pressure had dropped to 3 cm. of citrate and the circulation time to 19 seconds. However, there was no improvement in his peripheral edema. An indwelling catheter in his bladder was used during his entire hospital stay. His general condition improved until July 31 when he experienced a severe precordial pain radiating down the left arm. He perspired profusely and appeared to be in shock. His blood pressure dropped to 90/66. A gallop rhythm appeared. Electrocardiograms were taken on admission and after the attack of chest pain. These showed evidence of myocardial damage and left bundle branch block. He expired on August 6, 1946.

Dr. Hertzog: Does any one wish to make a diagnosis?

Physician: The history of severe chest pain, the cardiac decompensation, and electrocardiographic findings are those of coronary occlusion with myocardial infarction and congestive heart failure. However, there must be a "red herring" in this case in the neurological aspects. I understand that he had first noticed weakness of his legs at the age of twenty years, which was forty-two years ago. There was also a gradual loss of skin sensation in his legs. On admission to the hospital there was a complete anesthesia of both lower extremities extending as high as the first lumbar segment. He was paralyzed and confined to a wheelchair. The paralysis was of a flaccid variety. Reflexes were absent in his lower extremities. He was incontinent of urine and feces. The spinal fluid showed a marked increase in protein as high as 664 mg. per cent and was xanthochromic in color. The serology was negative. This is the picture of a spinal cord lesion in the lumbar cord. What was the clinical diagnosis?

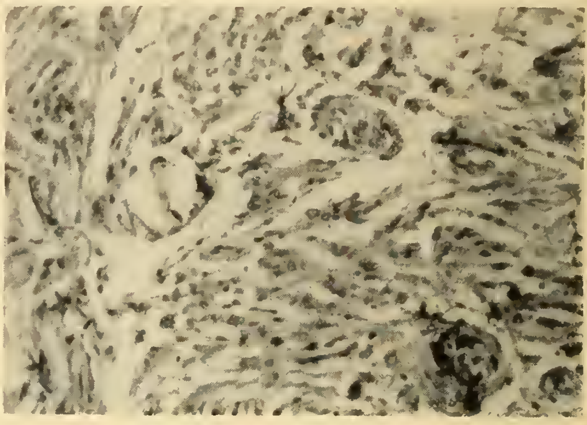

Fig. 2. Photomicrograph of spinal cord tumor, showing elongated cells and psammoma bodies.

Dr. Martinson: The differential diagnosis varied from spinal cord tumor, multiple sclerosis, subacute combined sclerosis, and neurosyphilis. The diagnosis in 1937 was multiple sclerosis.

Dr. Hertzog: The spinal fluid findings of a xanthochromic fluid with a 664 mg. protein is that of a block. The Queckenstedt test was likewise positive. The fluid clotted too quickly to allow a cell count to be made. Dr. Martinson will tell us what he found on postmortem examination.

Autopsy

Dr. Martinson: The body was well developed and well nourished. There were decubital ulcers over both hips. The heart weighed 430 grams. There was severe coronary sclerosis with complete occlusion of the anterior descending branch of the left coronary artery. There was an old infarct involving the greater part of the interventricular septum and the apex of the left ventricle. There were ascites, peripheral edema, pulmonary edema, hydrothorax, and passive congestion of the liver. In addition, the lungs contained multiple infarcts. The source of the emboli responsible for the pulmonary infarction was not demonstrated. Our interest was naturally centered upon the spinal cord. On opening the dura in the lumbar region of the cord, a firm white tumor mass measuring 1 x 4 cm. was found adherent to the cord and the meninges on the left side on its posterior aspect. The tumor appeared extrinsic to the cord but had subjected the cord to considerable pressure on its posterior aspect. The cord in this region appeared reduced to approximately one-half its normal size (Fig. 1). The remaining neurological examination showed nothing of note.

Dr. Julian Sether: Microscopically, this tumor proved to be a meningioma (Fig. 2). As seen on the screen, it is composed of well-differentiated cells resembling fibroblasts. There are many small pearl-like bodies scattered throughout the tumor. These are the so-called psammoma bodies, which are quite characteristic of a meningioma. The tumor is histologically benign. It had produced considerable pressure atrophy of the cord particularly on its posterior aspect.

Dr. Hertzog: The anatomical diagnosis, then, is meningioma of the spinal cord; coronary sclerosis with myocardial infarction; and congestive heart failure. Dr. Martinson will give us a discussion of spinal cord tumors, as in our experience they have been quite rare.

Discussion

Dr. Martinson: Spinal cord tumors are estimated to occur in one per 10,000 population to as frequent as one per 3,000 population.[4] Schlesinger[6], in Vienna, found 151 spinal cord tumors in 35,000 autopsies. Kernohan[3], of the Mayo Clinic, found spinal cord tumors to constitute 19 per cent of a series of 3,256 central nervous system tumors. Twenty-six per cent of his series of 500 menigiomas were located within the spinal canal. Most tumors occur in the third, fourth, and fifth decades of life, but no age group is exempt. Few lesions of the body show such dramatic results from early diagnosis and treatment or such tragic results from neglect. Tumors of the spinal cord are similar to those found in the brain and within the skull; however, the incidence of the various types is different. Intraspinal tumors are classified into medullary types if they arise from the cord itself and extramedullary if they arise from the outer meninges, nerve roots, or adjacent vertebrae. Extramedullary tumors are frequently subdivided into extradural and intradural tumors. Some tumors, such as neurofibroma, are occasionally both extradural and intradural. Rasmussen, Kernohan, and Adson[5], in 1939, classified the 557 intraspinal neoplasms in their series as follows: neurofibromas, 29 per cent; meningiomas, 25 per cent; intramedullary tumors, 11.5 per cent; sarcomas, 10 per cent; extramedullary hemangioendotheliomas, 8.5 per cent; extramedullary ependymomas, 6 per cent; chordomas, 4 per cent; and miscellaneous extramedullary tumors, 6 per cent. Of the whole group, 28 per cent were extradural; 53 per cent intradural but extramedullary; and only 11 per cent within the cord itself. In a later series, Kernohan[3] found 67.7 per cent of the intramedullary tumors to be ependymomas. In a series of 377 non-neoplastic intraspinal lesions, Rasmussen, Kernohan, and Adson[5] found 350 cases of protruded intervertebral disks, fourteen cases of hypertrophic arthritis, four cases of extradural abscess, seven tuberculomas, and one echinococcus cyst. Only one of this group, an abscess, was within the cord.

Spinal cord tumors and meningiomas, in particular, are more common in the thoracic region of the cord. In Rasmussen, Kernohan and Adson's series[5] 54 per cent of the 557 tumors were in the thoracic segment. Eighty-two per cent of the 140 meningiomas were located in the thoracic segment.

A detailed history and a careful neurological examination are essential for diagnosis and localization of intraspinal lesions. The presenting symptoms of an extramedullary tumor differs somewhat from one within the cord. The first symptoms of an intradural extramedullary tumor is usually nerve root pain due to irritation of the sensory roots at the site of the tumor. The pain may be intermittent and frequently aggravated by coughing, sneezing or straining. Fasicular twitchings due to motor root involvement may occur. These early symptoms may disappear due to complete destruction of the nerve roots. If the tumor compresses the anterior lateral region of the cord, it gives rise to weakness of the body below the tumor on the same side and loss of perception of pain and temperature on the opposite side (Brown-Sequard syndrome). If the posterior region of the cord is involved, the symptoms are those of loss of deep sensibility and ataxia. This may be progressive up to the tranverse level corresponding to the segment of the cord involved. As the tumor continues to grow and the cord is further compressed, both sides of the body below the lesion become spastic. Destruction of the pyramidal tracts gives rise to spastic paraplegia. The superficial reflexes disappear. The deep reflexes become exaggerated; the Babinski reflex becomes increasingly positive, and ankle and patellar clonus appear. When the extrapyramidal tracts are destroyed, flexor spasms supervene. Finally, the entire spinal cord is destroyed, and flaccid paralysis results. There is loss of bladder and rectal control and complete loss of sensation below the lesion. Trophic skin disturbances are common. The deep reflexes and clonus disappear. The Babinski reflex remains because the central portion of its reflex arc is located in the first sacral segment of the cord. Tumors of the cauda equina frequently cause sciatic pain. If the tumor is extensive, a lower motor neuron lesion results, as evidenced by flaccid paralysis and loss of deep reflexes. The Babinski reflex is absent in lesions below the fourth lumbar segment, as the central portion of its reflex arc is destroyed.

The spinal fluid is often characteristic in spinal cord tumors. Xanthochromic fluid that clots on standing due to the high protein content is known as the Froin syndrome. This, together with the positive Queckenstedt test, is indicative of an intraspinal block. The cell count is usually normal or only slightly elevated. Dry lumbar taps should be repeated at a higher level but not above the third lumbar vertebra.

Considerable aid in the diagnosis of spinal lesions can be obtained from x-rays. Camp[2] found direct roentgen evidence of spinal cord tumors in 30 per cent of the tumors in his series. These changes were erosion of the surrounding vertebrae, infiltration of the vertebrae by the tumor and calcification within the tumor. The majority of cases require aid of various contrast media injected within the spinal canal. Air myelography has the advantage of being non-irritating and being absorbed within a short period of time. However, the shadow is usually not distinct. Lipiodol has been used extensively but has the disadvantage of being irritating to the meninges and being non-absorbable. It casts an excellent shadow. Camp[2] found it to be more than 90

(Continued on Page 1284)

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from November Issue)

Thomas Heywood Everts, son of Sylvanus Everts, M.D., and Elizabeth Heywood Everts, both of English descent, was born on October 10, 1835, at La Porte, Indiana.

Sylvanus Everts, a direct descendant of Miles Standish, and of Eleazer Wheelock, the founder of Dartmouth College, was born in 1787 at Castleton, Vermont, and presumably in due time he obtained his medical training in his native place, at the Castleton Medical College; his father, Ambrose Everts, served in the American Revolution and in 1795 emigrated from Vermont to Ohio. The grandfather of Sylvanus Everts, also a Sylvanus Everts, was a High Church minister who was married to the sister of Governor Chittenden of Vermont. Elizabeth Heywood, who was born in 1795 near Augusta, Maine, was related to Thomas Heywood, the English poet.

To follow medicine or the church was traditional among the men of the Everts family. The second Sylvanus Everts has been quoted as saying that the profession of medicine is "the noblest, with the possible exception of the ministry, offered to a man." He was an active member of the medical profession of Indiana and, in 1820, was one of the organizers of the State Medical Society; for several years he served as its vice president. Long a prominent citizen of Indiana, he was for a number of years a member of the state legislature. Dr. Everts has been mentioned as having been for a short time an early settler, in 1856, of Rushford, Fillmore County, Minnesota; he presently returned to Indiana, where he spent the remainder of his life and where he celebrated his ninetieth birthday; he was then the oldest Mason in the state.

Thomas Heywood Everts, although of such versatility that he might with equal success have been a writer, a lecturer or a clergyman, unquestioningly entered the profession of medicine, as did his five brothers and his nephew, Henry C. Grover, of Rushford, son of Sophia Everts (Mrs. Josiah) Grover. Of the Everts brothers, Orpheus, the eldest, was born at Salem, Indiana, on December 18, 1826. Well educated, a graduate of the Indiana Medical College at La Porte in 1846, later a graduate of the University of Michigan and in 1867 of Rush Medical College, he became a prominent physician and a locally famous alienist in Indianapolis, Indiana, and in College Hill and Cincinnati, Ohio. For eleven years he served with honor as superintendent of the Central Hospital for the Insane and thereafter for many years until his death, in 1903, as superintendent of the Cincinnati Sanitarium. During the Civil War he was a surgeon of the Twentieth Indiana Regiment of Volunteer Infantry. His two sons, Charles Everts and William G. Everts, became physicians. Eudorus and

Carroll Everts, brothers of Orpheus and Thomas, both died of tuberculosis very early in their professional lives. Of the two other sons of Sylvanus Everts, information is lacking.

Thomas Everts received his earliest education at an elementary school conducted by a Mr. Brown in Michigan City, Indiana, and at a boarding school in Albion. The greater part of his medical training he obtained at the University of Michigan in Ann Arbor, between 1852 and 1855, and he would have been graduated there if in the last few months of his course he had not transferred to the Keokuk Medical College (later moved to the State University of Iowa at Iowa City), from which he received his degree in medicine; he made the change because his brother, Dr. Orpheus Everts, was a trustee of the new medical school at Keokuk. Later Dr. Thomas Everts took postgraduate work at Rush Medical College.

Thomas H. Everts was married in October, 1855, at the age of twenty, soon after his graduation from medical school, to Caroline Griffin Sleight, a girl of Dutch and English ancestry, who was born in New York City and who lived at home until her marriage at the age of nineteen. The four children of this marriage were Ambrose, Elizabeth, Mary and Katherine.

Never robust, after a few years in practice in Michigan City and Valparaiso, Indiana, Dr. Everts for the benefit of his health took a long journey, in the early sixties, by oxen-drawn wagons across the Great Plains to the Pacific Coast, by sailboat down the coast to the Isthmus of Panama and, after crossing the isthmus overland, by boat across the Caribbean Sea and up the Atlantic Coast to New York. His children still have his letters to his wife describing those adventurous months. On his return, in 1866, fully restored to health, he settled in Rushford, Minnesota, which was to be his home for twenty years, and entered earnestly into the practice of his profession.

In 1871 he was elected to membership in the Minnesota State Medical Society and from then on there is evidence of his constructive interest in the advancement of medicine both as a science and as an art in the many and well-prepared reports and comments which he submitted in response to official circulars of inquiry from the society and also from the State Board of Health (organized in 1872) on diphtheria and other contagious and infectious diseases, obstetrical practice and surgical procedures. Some of these reports were given with his nephew, Dr. Henry C. Grover, with whom he was in partnership for five years in the seventies. In 1878 Dr. Everts was one of the two physicians of Fillmore County (the other, Russell L. Moore, of Spring Valley) who co-operated with the State Board of Health in presenting information on the incidence of diphtheria and treatment for the disease.

In 1873, serving as state senator, Dr. Everts was influential in initiating legislation for compulsory education in Minnesota and, notably, since he was an ardent worker for temperance, in the passing of an act to establish a fund for the foundation and maintenance of a state inebriate asylum. Finally, when a fund had accumulated and the asylum had been organized and building begun at Rochester, Dr. Everts was a member of the board of directors of the short-lived institution. The only two annual reports of this board are eloquent testimony, as are the records of the State Medical Society for the period, to his effort to bolster the losing cause. In 1878 the law of 1873 was repealed and the Inebriate Asylum became the Second Minnesota Hospital for Insane.

Dr. Everts took a constructive interest in the civic and educational welfare of his community. He was a supporter of the Episcopal and the Unitarian Churches and, like his father before him, he was a Mason.

In her informal biography of her father, "Portrait of a County Doctor," Mary Everts Ewing gave many intimate and revealing pictures of a highly intelligent, cultivated, talented, kindly and sensitive man: When he first came into the community of Rushford, in which there were many Scandinavian settlers, Dr. Everts quickly mastered their language in order that he might better serve the numerous Norwegian patients in his twenty-mile circuit. He had great respect and liking for the fine Scotch pioneers of Scotch Prairie also, and his grief was deep at the death from typhoid fever of a young Scotch girl owing to failure of her household to carry out to the letter his careful instructions; in those days trained nurses were not available. In all other cases of the disease, and they were many, for typhoid fever was then an annual scourge, he had had complete success in the treatment. . . . Often he was called in consultation by physicians in Winona in medical and surgical cases. He was, of course, a general practitioner, as were his contemporaries, called on to treat everything from "hives to hydrophobia," toothache, trauma, tuberculosis, diphtheria, smallpox, hysteria. He had a rare understanding of mental therapy, and could he have entered medical practice forty years later he might well have been a specialist in the treatment for nervous and mental diseases. In the annals of the family his outstanding case of nervous disturbance was known as that of "The Lady and the Pills." The lady was a patient who believed herself unable to walk after a slow convalescence from typhoid fever; the pills were made of brown bread slightly tinctured with quinine and prescribed with skillfully given instruction and predictions of progressive gain in strength which would end in cure at the end of a week; and at the close of the week the lady met the doctor at the gate, radiantly well and grateful for his marvelous skill. For a time this apparently miraculous success brought him an almost embarrassing stream of patients, lame, halt and blind. . . . In that period surgery was in its infancy, antisepsis new, anesthetic agents were used with the utmost caution and only when a patient's condition was so grave that the additional risk was not of prime importance. Postmortem examinations were made by the more progressive practitioners in the search for knowledge; on one such occasion Dr. Everts received a cut from a pus-laden instrument, to the anxiety of himself and his family, but fortunately, although symptoms of infection appeared, the condition soon cleared up. At this time, as always, Mrs. Everts quiet courage was a source of strength to her husband. . . . Affectionate, gentle and humorous in his home, in the earlier Rushford days Dr. Everts was the favorite playmate and willing victim of his little daughters. One of their prized diversions was, while he sat studying, to dress his slippered feet in doll clothes and to braid his silky beard into tiny plaits, each plait tied with a gay ribbon. And when, as occasionally happened in the course of the game, their father, quite oblivious of his appearance, went to answer a knock at the door, they would await with mingled delight and dismay the reaction of the caller.

Dr. Everts felt keenly the tremendous responsibility of his decisions and possible mistakes; the pain or death of a patient meant suffering for him. As his daughter wrote of him: "All the qualities which militated against his health and happiness in the profession, dramatic instinct, sensitiveness, sympathy and tenderness, keenness of insight into others' natures and their needs, were the very ones that made him a gifted doctor . . . and finally drove him into another calling."

As it happened, the immediate cause of his change of occupation was external and his removal from Rushford relatively sudden. When the Rushford Wagon Works was burned to the ground, it was decided to rebuild in Winona, a decision which automatically removed from Rushford fifty or more families of officers and employes of the company who had been Dr. Everts' most lucrative patients. The doctor, then forty-five years old, with a family of children to be educated, was in a quandary, when there came a telegram offering him the editorship of the Boulder (Colorado) *News* and *Courier;* the owner, Mr. Shedd, held Dr. Everts in grateful memory for having saved his life years before when Mr. Shedd had come to Rushford seeking cure or alleviation of tuberculosis; he knew of Dr. Everts' ability as a writer of editorials and leaders for the *Rushford Star* and had thought of him at once as editor of the newly purchased Boulder paper.

In 1881 Dr. Everts removed with his family to Boulder and until 1905 remained in Colorado, for a year on the newspaper and for more than twenty years as a mine examiner. During this period, although he did not re-enter the practice of medicine, he lectured on medicine at the University of Colorado, in Boulder, and on his travels through the mountains he always carried his medical kit of first aid remedies and surgical instruments, in a brown satchel swung over his shoulder by a strap, and there were many occasions for use of his medical knowledge.

There is record that after the Medical Practice Act of 1883 was passed, Dr. Everts, in September, 1885, took out a license to practice in Minnesota; he never practiced in the state after 1881, however, although for a time after leaving Colorado he lived in Minneapolis.

In October, 1924, while both were still in good health, Dr. and Mrs. Everts celebrated their sixty-ninth wedding anniversary. On May 11, 1925, Dr. Everts died from pneumonia at Lake Forest, Illinois; his wife survived less than a year and died in March, 1926. In 1943 the three daughters were living: Elizabeth Everts (Mrs. Joseph Aire) Greene, a widow, and Katherine Jewell Everts in Brattleboro, Vermont, and Mary Everts (Mrs. Charles Hull) Ewing in Sarasota, Florida.

Katherine J. Everts was graduated from the University of Minnesota in 1894, taught public speaking at the Winona Normal School for a few years and then for nearly fifteen years toured the United States as a dramatic reader; for three years she was director of drama and expression at the University of California, in Berkeley, and in 1920 established her own school, Camp Arden, at Brattleboro. Mary Everts Ewing, before her marriage in 1906, was a member of the faculty (teacher of public speaking and drama) of the State University of Iowa for five years and for three years of that time also served as dean of women of the university.

Jesse C. Fate, son of John Fate, the latter an early settler at Spring Valley, was born in Ohio in 1840 and came to Minnesota in 1858, preceding his father into the new state by two years. In 1861 Jesse Fate enlisted in the Third Minnesota Regiment of Volunteer Infantry and served until September, 1865. On his return home he resumed his formal education and after two years as a student at the state normal school he taught district school for several years, at least through 1874 and probably until 1876. During this period he was married to Josephine McAdams, a native of Ohio; Mrs. Fate died on July 18, 1874, leaving one child, Edith.

In 1876 Jesse Fate began the study of medicine. In October, 1880, he was graduated from the Hahnemann Medical College and Hospital at Chicago and in the following spring he settled in Chatfield, where he served as physician and surgeon for about ten years. He is remembered there as a small man, short and slender. In 1891 Dr. Fate was licensed to practice medicine in Nebraska and presumably within the year moved to that state, probably to the town of Weeping Water, which is known to have been his home from 1896 to the end of his career; he died in Weeping Water on June 27, 1928.

Dr. Frank, not otherwise mentioned in material available to the writer, in November, 1886, performed an operation on Dr. Don J. Lathrop, of Granger, for repair of tissue and insertion of artificial eyes; Dr. Lathrop, as has been told had been blinded and terribly injured by an explosion of gunpowder on July 4, 1882. It is likely that the surgeon was Dr. Adam Frank, of Iowa, town not stated, a graduate of the Jefferson Medical College in 1867, licensed to practice in Minnesota in 1883, possessor of state certificate No. 1440 (R). The village of Granger, Bristol Township, touches the Iowa state line; many physicians of Iowa had extensive practices in the bordering counties of Minnesota.

Dr. Gaskill, of Canton, Canton Township, is another physician of whom mention only has been noted. On July 28, 1887, Dr. Gaskill, with Dr. J. M. Wheat, of Lenora, assisted Dr. F. A. Blackmer, of Albert Lea, Freeborn County, in operating for a huge ovarian tumor on a member of a pioneer family of Newburg Township. Inasmuch as this was a local news item through editorial channels, it seems possible that there was an error in names and that Dr. Gaskill, of Canton, may have been Dr. H. H. Haskins, a well-known physician and surgeon in Canton from 1878 to 1902. Dr. Haskins and Dr. Wheat often were associated in surgical cases.

H. Gilbert was one of five settlers from Pennsylvania who with their families arrived in Spring Valley in 1857, having traveled by rail to Chicago and thence overland, probably ferrying the Mississippi from Galena to Dubuque. These men were received as an important accession to the village and they became prominent in its development.

Dr. Gilbert is mentioned in a county history as having sold one pair of his horses for $600 to T. B. Johnson, the owner of the Commercial Hotel, and in another record as having opened offices on Broadway: "H. Gilbert, M.D., Dealer in Drugs and Medicines." The only specific mention of him as a practicing physician was that he was one of the physicians (the others were Drs. Cole and Twitchell of Chatfield) who attended Dr. William Henry Dean, of Spring Valley, who received fatal injuries in an accident at Stevens' mill in October, 1858.

Obviously, Dr. Gilbert's interests and activities were various. In the year of his arrival he was candidate for the office of assessor in the third district on the Republican ticket. He figured largely in the formation of the Fillmore and Mower County Agricultural Society; the organizational meeting was held in his office, and he was chosen chairman and elected president. And in still another field he was in the forefront. Spring Valley, at that time a thriving village boasting a handsome white school building, two general stores, one hardware store and a tinshop, had a lyceum which, in 1858, had been in progress several months and the weekly sessions of which, according to J. W. Bishop, C.E., were attended by young and old, with interest and profit: "The temperance pledge is followed by a list of 104 names, comprising most of the inhabitants, and bids fair soon to include all. Good citizens, whether mechanics, merchants, or farmers, will find a hearty welcome. Address, for further information, J. M. Strong and Co. or Dr. H. Gilbert, Spring Valley, Minnesota."

Francis Adelbert Gowdy, son of F. O. Gowdy and Ida Averill Gowdy, was born in 1871 at Fond du Lac, Wisconsin. His father, who had come to Wisconsin in 1859 from Oneida, Onandaga County, New York, in 1878, moved with the family to Spring Valley Township, Fillmore County, Minnesota, and from that community in 1903 went north to Koochiching County.

Francis Gowdy received his early education in the local schools of Spring Valley and in due time his medical training at the Hahnemann Medical College and Hospital, in Chicago, from which he was graduated in 1896. Licensed to practice in Minnesota on June 10, 1897, Dr. Gowdy at once began his professional career in the village of Granger, Bristol Township, where he remained until he moved to Harmony, also in Fillmore County, in 1902. From Harmony he carried on for the next ten years an extensive practice throughout the southwestern quarter of the county. In 1912, on leaving Harmony for Sidney, Montana, he moved permanently from Minnesota; after seven years in Sidney, where for a time he was associated with Dr. J. S. Beagle, as has been noted, he was obliged because of ill health to give up his western location and when he resumed medical practice a few months later, it was in Miami, Florida.

Although Dr. Gowdy did not enter medicine until the last decade of the last century, the conditions of transportation then were almost as difficult as those with which the pioneer physicians of early years had to contend; in spring, summer and autumn, there were seasonal floods and mud, and in the winter the roads drifted full of snow, so that travel was most safely accomplished by going in sleighs over the drifts along the line fences. Dr. Gowdy usually employed a driver in order to snatch a little sleep on the road between calls, and on winter trips he rather precariously rode with a lighted lantern, which served as a heater at his feet under the robes. When automobiles came in, he was the first in Harmony to own one, and it is recalled even now by his old acquaintances how the people would run to the road to see him drive by and how they would flock around the new invention when he stopped to call on a patient.

Recollections and comments, unrelated though they are, of various persons have given an impression of Dr. Gowdy. Dark-complexioned, of medium height and weight and fine, erect carriage, he was friendly and humorous, well liked in the community as a fellow citizen and trusted as a conscientious and able physician who was also a congenial friend. Many remember gratefully that he answered calls promptly and was efficient and expeditious in his handling of cases, and they recall too that when he could take the time he could enjoy a meal or a cup of coffee with the family of the patient. One person has quoted Dr. Gowdy as saying, when he was treating a Welsh girl, of Granger, for rheumatism, "The Welsh have rheumatism in their systems more than any other people." Another has told of an occasion in winter when the doctor was called from Harmony into the country to see a child who proved to be dying of diphtheria; not having been informed of the nature of the case, he did not have with him his protective robe and facial mask, and as the result of the exposure contracted the disease and became desperately ill. Dr. O. A. Kibbe, of Harmony, who settled in the county after the turn of the century, was his attending physician. Dr. Gowdy made a good recovery but, always impatient at delay and loss of time from his work, on the first day that he was able to get around, he jeopardized his convalescence by driving in a bobsleigh on a call to Canton, ten miles away.

One of Fillmore County's most useful and valued citizens, Dr. Gowdy always was generous in his support of good causes and ethical in all his relationships. He was a member of various fraternal organizations and of the Houston-Fillmore Medical Society, the Minnesota State Medical Association and the American Medical Association.

In Spring Valley, Minnesota, Francis A. Gowdy was married to Jessie Rix, who was born in that village, the daughter of James Brown Rix and Sarah Truesdale Rix; James Rix was native of the Province of Quebec, Canada, the son of English parents; Sarah Truesdale was born in Oconomowoc, Wisconsin, of English and Scotch parents. Dr. and Mrs. Gowdy had two daughters: Mildred, now deceased, who was married to Dr. W. F. Andes, of Miami, Florida, and Maxine, the wife of James Pryor Reeder, an attorney of Miami. The Gowdy grandchildren are Paul and Susan Andes, and Joan H., Nancy Lee and Maxine Reeder.

Since 1919, Dr. Gowdy has carried on a surgical practice in Miami, maintaining office hours and hospital affiliations and dividing his time between Miami and Fort Pierce, where he has a citrus grove and where, in 1937, he and Mrs. Gowdy established their residence.

E. H. Grannis, a homeopathic physician, was in Chatfield in 1875. He is remembered in the village as a small man, young, enthusiastic, well-liked, and a member of the Chatfield band, which played both at home and, on special occasions, in neighboring towns.

J. A. Graves, according to an early history of Fillmore County, was a charter member of the Fillmore County Medical Society, which was organized in the autumn of 1866. Neither local records nor archives of the American Medical Association disclose any further information concerning this physician.

(To be Continued in the January Issue)

President's Letter

IT seems only proper and fitting that this, my last letter as president of the Minnesota State Medical Association, be devoted to an expression of thanks and best wishes.

The congenial, helpful attitude made its first appearance when Dr. E. L. Tuohy, Past President, wrote to inform me of current developments and openheartedly offered his co-operation and best wishes. This seemed to strike the keynote, for congeniality, courteous helpfulness and a general spirit of camaraderie have characterized the relationships with all whose help has been needed, solicited or proffered.

Responses and actions of the general membership have been unstinting and wholehearted. Attendance at meetings has demonstrated an unusual interest in both scientific and economic problems. Almost without exception, graciousness, civility and a desire to help have been apparent.

All of the members of the Council and other officers of the organization have freely offered a helping hand whenever one has been needed. Mr. Rosell, Mrs. Sletten, Mrs. Juran and the rest of the personnel in the State Office have left no stone unturned to make the pathway easier. The more difficult the task ahead, the greater has been their effort. Various committees have fully responded to every call in spite of the great personal inconvenience entailed.

So, it is with a heart full of gratitude and appreciation, a realization of the unbounded willingness and harmony of the entire membership, and a consciousness that the very essence of the organization is helpfulness and co-operation that I turn the keys of state over to Dr. Buie.

It is my parting hope that you realize the true caliber and worth of Dr. Buie and give him as wholesome help as you have given me. This is vital to the success of the organization for he is, through many years of intimate experience with the problems of the profession, fully acquainted with the needs at hand. Yet, he cannot bring his wealth of talent and ability to its maximum fruition without your complete support. With it, though, the Association should reach unprecedented success and prosperity.

Thank you sincerely, and my best wishes to all.

Edwin J Simons

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE HILL-BURTON BILL

THE Hill-Burton Hospital Survey and Construction Act, which was passed by Congress in July, 1946, and signed by the President in August, was backed by the American Hospital Association and by the American Medical Association. The act provides, in brief, for state surveys of needs for new hospitals or health centers, and for Federal subsidy of a third of the cost of construction and equipment of new hospitals or additions to present hospitals, providing two-thirds of the cost is met by state or local funds. No Federal funds are to be provided for maintenance of hospitals or for meeting deficits.

The State Health Department will make the survey of state needs for additional hospitals, the cost to be met by the Federal appropriation. Our State Health Department has been busy making this survey for several months. The State Health Department, assisted by an Advisory Committee, will administer the provisions of the act within the state. Thus, the determination of hospital needs and the allocation of Federal funds will be on a state level.

The Washington administration of the provisions of the Hill-Burton Act is under the United States Public Health Service, and Dr. Herman E. Hilleboe has recently been placed in charge of this activity of the Service. Assisting in the administration is a Federal Hospital Council, which consists of eight members. One of them is a physician, Dr. Robert C. Buerki, dean of the Graduate School of Medicine, University of Pennsylvania. Another member is Michael Davis, who represents "the consumers of medical service." The council, however, contains no representative of the American Medical Association or of the American Hospital Association. Working with this council to assist the United States Public Health Service in the administration of the act is an Advisory Committee, of twenty-four members, of which the AMA has two representatives.

Three million dollars have been appropriated by the Federal government for the survey of state hospital needs, in addition to $75,000,000 yearly for hospital construction.

Admittedly, there is a crying need for more hospitals. High income taxes make it well nigh impossible to obtain funds for this purpose by voluntary subscription, as in the past. Involuntary taxes will provide the funds, but such is the present philosophy of government.

It seems likely that with individual state supervision there will be less likelihood of unwarranted hospital construction, unless the states extend their subsidies to include the maintenance of hospitals and the meeting of deficits.

INTESTINAL OBSTRUCTION

IN a recent study,[1] the results of treatment of cases of intestinal obstruction at the University of Minnesota Hospitals over a fifteen-year period were reviewed. In the mechanical obstructions, the mortality per case was 11.7 per cent and per patient, 12.2 per cent (1942-1946). When one realizes that two decades ago the average mortality of this disease was 30 to 40 per cent[2], the progress that has been made is apparent. The great strides in the management of ileus have been accomplished through: (1) the recognition of the different types of obstruction; (2) the judicial use of the Wangensteen suction method; (3) adequate replacement of lost fluid, blood and electrolytes, by parenteral fluids, blood and plasma. No other group of patients need such diligent and individualized attention as patients with intestinal obstruction.

It is generally agreed that paralytic (inhibitive) ileus is best treated conservatively. Strangulation obstructions should never be treated conservatively but should always be operated upon if the condition of the patient permits. When it comes to the treatment of mechanical obstruction, there is some difference of opinion as to the treatment. Complete mechanical obstructions due to gall stones, malignancies, et cetera, usually have to be relieved by operation. Partial mechanical obstructions due to adhesions are ideally treated conservatively. Some surgeons operate upon these patients with a low mortality but the experience of the University of Minnesota Hospital group shows that cases of partial mechanical obstruction on an adhesive basis may be equally as well treated conservatively.

As the years pass, the indications and limitations of siphonage drainage in the treatment of intestinal obstruction become more clear. The medical profession owes a debt of gratitude to Dr. Wangensteen for establishing the value of siphonage drainage in certain cases of intestinal obstruction. Future reports from his clinic on the results of treatment of ileus will be eagerly anticipated.

Charles E. Rea, M.D.

1. Dennis, C. and Toom, R.: Small bowel obstruction. Staff meeting, Bull. U. Minn., 18:70, 1946.
2. Cole, W. H.: Intestinal obstruction. Kentucky M. J., 42:130, 1944.

RUBELLA AND PREGNANCY

FOLLOWING a severe epidemic of rubella (German measles) in Australia in 1940, a large number of infants with congenital cataract were observed in 1941. Gregg gathered seventy-eight cases of congenital cataract from his own practice and that of others, and found that in all but ten of the cases the mothers had had rubella in the first four months of pregnancy. Another group of Australian physicians, headed by Swan, also studied congenital defects in infants born to mothers who had had rubella during their pregnancies, and reported finding, in addition to cataracts, other congenital defects, such as deafness, congenital heart disease, and microcephaly. American and British authors have since reported additional cases which, according to Swan, now number approximately four hundred. In virtually all cases, the rubella had occurred during the first four months of pregnancy. Early reports expressed the opinion that rubella contracted during the first two months of pregnancy would result in a defective infant in 100 per cent of the cases, but this pessimistic view has been modified in Swan's most recent publication. Swan, however, reports only a few instances of congenital anomalies following morbilli (measles), mumps, chicken pox, and herpes zoster. The cases are too few to be conclusive, and we know of no report of any extensive investigation of the effect of other virus diseases on the offspring.

Most of the reports on this subject have been made by tracing back to the occurrence of rubella in the mothers of infants suffering from congenital defects, particularly cataracts and deafness. Fox and Bortin, however, approached the subject in another way. In an analysis of 22,226 cases of rubella which occurred in Milwaukee in the years 1942-43-44, they found that in 581 instances the patients were married women. They investigated 152 members of this group and found that eleven had had rubella during a pregnancy—five during the first two months, four during the third and fourth months, one in the seventh and one in the ninth month. All had been delivered of normal babies except two. One of these was a stillborn hydrocephalic, and in this case the mother had had rubella during the first month of pregnancy. The other had been a blue baby with slight symptoms of hydrocephalus, but had recovered and was then normal. This report is quite contrary to the reports from Australia. It suggests that the severe epidemic in Australia and the lack of investigation of the incidence of normal offspring from mothers who had had rubella during pregnancy, may account for the contrary findings.

The question has been raised by several authors as to the justification of aborting women who have contracted rubella during the first four months of pregnancy, a time when structures, such as the eye and ear especially, are in early stages of development and are particularly susceptible to injury. The Milwaukee investigation indicates that abortion for such a reason is not justified.

It is no new suggestion that pregnant women should make every effort to avoid contracting contagious diseases, but that they should take special precaution in the presence of an epidemic of rubella is indicated by recent reports.

BLOOD PRESSURE AND AGE

IT is important to interpret correctly the significance of blood pressure findings in individuals over fifty. If the physician has the opinion that the normal blood pressure in this age group is the same as in the younger group, he will label those with moderate elevation as pathological and may cause the patient needless concern.

Two points of view as to normal blood pressure in advancing age have been expressed: one, that it is the same as in youth, and the other, that it tends to increase with years. A rather general view is that a person is entitled to a systolic blood pressure of 100 plus his age. Is this correct?

An article by Russek and Zohman,* in reporting the results of blood pressure readings on 3,691 men between the ages of fifty and ninety-five, confirms other reports that the systolic blood pressure does increase with age, whereas the diastolic remains about constant. Their figures show an increase in systolic pressures from 138.9, on an average, for the fifty to fifty-four age group, to 164 for the eighty-five to ninety-five group. The average diastolic readings, however, remained around 87 to 90 in all the groups over fifty years of age.

It is reasonable to explain these findings, partly at least, as due to the loss of elasticity in the aorta. It is the elasticity of the arteries, of the aorta particularly, that maintains blood pressure during diastole. Any appreciable loss of this elasticity would tend to a lowering of diastolic pressure, and a compensatory increase in systolic pressure to maintain normal physiologic circulation, would be expected.

If normal blood pressure readings are the average obtained in the examination of large groups of presumably normal individuals, then we may conclude that systolic pressures ranging from 140 in individuals fifty years of age, to 164 in those over eighty-five, can be considered normal, and, roughly, an individual is entitled to a pressure of 100 plus his age.

POLIOMYELITIS IN 1946

THE incidence of poliomyelitis throughout the country in 1946 has been more than double that of the median for the preceding five-year period. Up to November 2, 1946, a total of 22,937 cases had been reported for the country at large in comparison with 12,342 for 1945, 17,888 for 1944, and the median for the past five years of 11,378.

The epidemic this year hit the east and west North Central states hardest, although the west South Central, Mountain and Pacific states were also rather severely affected. The New England states and the Atlantic states were comparatively much less affected.

In Minnesota, up to December 3, 1946, there were 2,835 cases of poliomyelitis reported, with a mortality of 7.4 per cent. Fifty-five per cent of the patients were in the first decade of life, and 71.6 per cent were under the age of fifteen. Slightly more than half (54.7 per cent) of the cases occurred in males. The mortality rate was lowest in the age group under fifteen years of age, as compared to that in the adult group. As to the deaths, 63.2 per cent were in males and 36.8 per cent were in females.

The epidemic became manifest this year the first week in July, not only in Minneapolis but throughout the state. It reached its peak during the last week in July in Minneapolis and Saint Paul, but not until the second week in August in the rest of the state, and rather slowly diminished from then on.

As to distribution, Minneapolis had 767 cases with forty-seven deaths; Hennepin County, 166 additional cases with fourteen deaths; Saint Paul, 251 cases with twenty deaths; and Ramsey County, an additional thirty-eight cases but no deaths. Duluth had sixty cases and five deaths, and St. Louis County had an additional 129 cases with seven deaths. The figures for several other counties were: Anoka, seventy-two cases with nine deaths; Itasca, fifty-nine cases with two deaths; Stearns, sixty cases with four deaths; Wright, fifty-two cases with three deaths; Douglas, thirty-nine cases with four deaths; Morrison, forty-seven cases with one death; Koochiching, thirty-five cases with four deaths; Ottertail, thirty-five cases with six deaths; and Rice, thirty-two cases with two deaths.

Of the 269 out-of-state patients who came to Minnesota for treatment, among whom twenty-four died, 189 came from Wisconsin, thirty-three from South Dakota, and seventeen from Illinois.

These figures for Minnesota were kindly submitted for our review by courtesy of the Minnesota State Department of Health.

AMERICAN FOUNDATION FOR TROPICAL MEDICINE

The American Foundation for Tropical Medicine has been established in memory of the late Harvey Firestone. The undertaking will be a co-operative one, Harvey Firestone, Jr., providing the physical plant and the government of Liberia the site and facilities for operation of the plant in Liberia. The purpose of the Foundation will be research in the prevention and treatment of tropical diseases such as typhus, malaria, plague, cholera, the dysenteries, smallpox, yellow fever and African tryanosomiasis, diseases uncommon in the United States and for the study of which facilities in this country are woefully lacking. Dr. Thomas T. Mackie of New York has been chosen president of the Foundation.

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*Russek, Harry I., and Zohman, Burton L.: Normal blood pressure in senescence. Geriatrics, 1:113, (March-April) 1946.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COMMON MEDICAL PROBLEMS AIRED AT NORTH CENTRAL CONFERENCE

Medical problems common to the doctors in the six North Central states were discussed at the annual North Central Medical Conference held Sunday, November 10, in Saint Paul. Present at the Conference were about seventy-five officials and committee chairmen representing the state medical associations of Iowa, Minnesota, North and South Dakota, Nebraska and Wisconsin, together with representatives of the American Medical Association, the United States Public Health Service and the Washington office of the Veterans Administration.

Among the guests who appeared on the program were the following AMA officials: Dr. E. J. McCormick and Mr. Thomas A. Hendricks, Chairman and Secretary, respectively, of the Council on Medical Service; Mr. J. W. Holloway, Jr., Director of the Bureau of Legal Medicine and Legislation; Dr. L. W. Larson, a member of the Committee on Rural Medical Service; and Dr. C. M. Peterson, Secretary of the Council on Industrial Health. Dr. Herman E. Hilleboe, Assistant Surgeon General of the U. S. Public Health Service, and Dr. G. D. Williams from the department of medicine and surgery of the Veterans Administration in Washington were also guest speakers.

AMA Is Powerful Instrument

With a vivid picture of the American Medical Association as "a powerful instrument" with which the American doctors can win their fight to preserve American Medicine, Dr. J. D. McCarthy, Omaha, Nebraska, Conference President, officially opened the meeting.

The title of his presidential address was "The American Medical Association as an Instrument to Advance the Ideals of American Medicine," and in it he paid tribute to the achievements of the AMA and he also described ways in which all doctors could participate to make the Association serve in an even greater capacity.

"Physicians are in the midst of what might well be a life and death struggle," he said. "Because of the trends and the written, but fortunately, not yet adopted federal and state socialistically inclined medical legislation, the AMA and its constituent societies find themselves engulfed in a fight to preserve not only a godly vocation and the practice of medicine as we have known it, but the Association's future as well."

Dr. McCarthy called upon every doctor present to give his wholehearted support to the fight. Said he, "the AMA is a big 'machine'—and like all other machines, it has working parts which run smoothly if it is operated strictly according to directions. While a machine needs oil at times, it doesn't want TNT, just as workmen need counsel, not abuse."

Condemning what he termed "descent to gutter politics" as a means of gaining ends, Dr. McCarthy declared that only through unity of purpose, the channeling of suggestions, resolutions and criticisms through in an orderly manner, the threshing out of problems within the organization itself, instead of on the front pages of metropolitan newspapers, could the powerful instrument of the American Medical Association be operated effectively.

"Through sympathetic understanding, full co-operation, constructive criticism and undivided loyalty," he concluded, "this instrument will accomplish in an evolutionary revolutionary way all of those things which are near and dear to every physician's heart."

Co-operation Will Defeat Socialism

The next speaker was Mr. Hendricks, who spoke on "Public Relations of the American Medical Association." He also joined with Dr.

McCarthy in the opinion that only through co-operation on the part of every doctor in the Association could the socialization of medicine be prevented.

He said that the fire-power and punch of American Medicine stems from the state and county societies. He told the delegates that the important public relations job ahead of the AMA at present is to "get its Ten-Point Program off the printed page" and start it actually working.

Mr. Hendricks warned the delegates that the co-operative consumer movement will bear careful watching and that the battle against socialism must not be relaxed for a minute on account of the Republican victory. Instead, he said, efforts should be redoubled to get a constructive health program going.

Doctors will see health legislation introduced at the next Congress, Mr. Hendricks promised. The labor influence will continue, he said, under the direction of the ominous John L. Lewis.

To the question—"What can we do?"—Mr. Hendricks said: "The AMA is ready, the state and county societies must also be ready.

" 'Back to normal' isn't enough, 'regular meetings' and 'regular programs' aren't enough, 'back on schedule' is not enough, 'usual meetings' are not enough . . . nothing short of an all-out, intense, well-directed local organization with active, functioning committees covering each subject, working as they have never worked before, is enough to produce what the public expects from medicine."

Discuss Rural Medical Care

The problem of providing adequate medical care in rural areas was the subject of Dr. Larson's talk. He described the existing situation and said that the two major phases of the rural medical problem were undoubtedly *availability* and *cost.*

These two problems can be met, he said, by co-operative effort on the part of both the profession and rural residents. He noted the fact that "farm people are beginning to realize that much of the responsibility for obtaining and keeping a practitioner in rural areas rests with them. They must assure a doctor that he will get a decent living wage, that he will have opportunities to advance and proper facilities with which to practice modern medicine, and that he can live reasonably comfortably in a town where there are educational and recreational facilities for his family."

The AMA's part in helping to solve the problem has been to encourage men to locate in rural areas, where the needs are greatest. The AMA has also held a national conference on the problem and is planning another. This second conference on rural health is to be held in Chicago next February and representatives of the major farm organizations will join at this time, Dr. Larson said, with those of the medical profession to pool their ideas and agree on a program of action."

In his talk on "National Legislation" before the Conference. Mr. Holloway reviewed some of the medical legislation taken up by the last Congress and made some predictions as to what can be expected at the next session.

New Congress to Start Afresh

Mr. Holloway wanted it clearly understood at the outset that "when the Congress adjourned in August, it wiped the legislative slate clean and that when it reconvenes it will be starting afresh.

Among the important pieces of legislation reviewed by Mr. Holloway were the Hill-Burton Hospital Survey and Construction Act, which became law by signature of the President on August 13, 1946; several bills introduced for the furthering of cancer research; the Pepper Maternal and Child Welfare Bill; the Wagner-Murray-Dingell Bill; and the Taft-Smith-Ball Bill, intended as a substitute measure for the Wagner-Murray-Dingell opus.

Mr. Holloway pointed out that the benefits of the Hill-Burton Act are already evident. Growing out of the law, he said, is a movement to promote uniform hospital licensure laws, providing definite standards for hospitals, both those constructed with federal aid, and other hospitals.

Regarding cancer research, Mr. Holloway reported on two bills which got nowhere in Congress and a third which made the grade. This latter measure authorized the U. S. Public Health Service to administer grants-in-aid to the states for cancer control work. Mr. Holloway said that the bill sets up a program similar to those being operated for venereal disease control, tuberculosis control and general health, and that it authorizes the training of personnel, private physicians and surgeons, radiologists and pathologists and also provides in the various states statistical units for collection of data relative to cancer, the maintenance of local tumor registries and payment for specific diagnostic procedures and radium therapy. He reported that Minnesota's share of the appropriation is to be $52,665.

The Pepper Maternal and Child Welfare Bill, of course, failed to pass, Mr. Holloway said, but grants to states for maternal, child health, crippled children's and child welfare services were authorized in another way, by amendments to the Social Security Act, amendments which conferred grants without giving any additional powers to the federal government.

Wagner-Murray-Dingellites "Will Be Back"

As for the Wagner-Murray-Dingell Bill, Mr. Holloway said, no intelligent person expected it to pass. However, he said, "as long as we have in Congress men who espouse ideologies foreign to our way of thinking we may expect recurrences of such legislative proposals." These men will be back with the Eightieth Congress, he warned.

Certain changes in committee chairmanships in Congress were noted by Mr. Holloway, by which he predicted that "it would seem any proposal for compulsory sickness insurance will receive even less consideration in the Eightieth Congress than it did in the Seventy-Ninth.

The Taft-Smith-Ball Bill, Mr. Holloway said, will be studied further and will probably be introduced in a modified form. The Council is holding a conference with the bill's sponsors early in December, he said.

Following the dinner, held at the conclusion of the morning session, the conference reconvened and officers were elected. Dr. William J. Duncan, Webster, South Dakota, is the President for 1947; President-elect is Dr. A. W. Adson, Rochester. Mr. Rosell was re-elected to his post of Secretary-Treasurer.

Dr. McCormick's talk followed the election. He outlined the history of the Council on Medical Service of the American Medical Association since its founding in 1943. The question of how best to promote the spread of prepayment medical service plans, Dr. McCormick said, has been turned over lock, stock and barrel to the Council. It is in this field that the medical profession will have its greatest opportunity to answer its critics, he said.

"It is time," Dr. McCormick urged, "that the American public recognize the fact that in the United States the health record is the best in the world and that there is better medicine available to more people at lower cost than in any other country."

His plea was for co-operation among the members of the medical profession and with the members of the Council on Medical Service in striving to attain the common objective, that of preserving the American system of medicine.

Council Maintains Special Services

Dr. Adson's topic for discussion was "Prepayment Medical Care Plans" and it covered particularly the work that the Council on Medical Service is doing toward assisting states to work out prepayment medical care plans so that better medical care on a lower cost basis will be made available under these plans.

Dr. Adson said that the Council maintains special services for the states to help them work out contracts and agreements and to help them avoid many of the pitfalls that have formerly been encountered.

"The two steps essential to carrying out a definite program for prepayment medical care plans," said Dr. Adson, "are (1) setting up minimum standards and (2) granting the Seal of Approval to plans meeting these minimum standards.

"The Council has taken the position that it will give its Seal of Approval to voluntry plans that meet the minimum requirements and which are sponsored by doctors, or to plans which are sponsored and controlled by doctors, but are underwritten by oldline insurance companies, where the recipient receives the best medical care available in the community."

Dr. Adson described the setting up of Associated Medical Care Plans, Incorporated, which he termed "the unifying force which is proceeding to work out reciprocity in the contracts and premiums among the various state plans."

Dr. C. M. Peterson gave a running account of the activities participated in by the Council since the National Bituminous Coal Mine Wage Agreement which was executed May 29, 1946, during the period of government operation of the mines.

Taking Coal Mine Agreement Seriously

Whereas Dr. Peterson believes that there is little imminent danger of any radical or sudden change in the present health service setup among miners, the Council on Industrial Health is taking the coal mine agreement seriously, has held several meetings and is making a great effort to improve relations with the groups concerned. He described the Navy Survey which is being conducted to determine the status of the health conditions and other conditions which have bearing upon the health and welfare of the people in the coal mining areas. He promised that improvements will be made where needed as soon as this survey of the actual needs is completed.

He noted that the question of medical care and health provisions included in wage contracts is gaining in importance and that this is a significant development in the field of industrial medicine.

Dr. Williams, reporting on the status of the Veterans Medical Care Program of the Veterans Administration, revealed that as of November 10, 1946, the VA had agreements or contracts with 28 state medical associations or state medical service organizations. Negotiations, he reported, were almost completed in 13 other states, giving a total of 41 states.

"The amount of outpatient treatment that must be given to our veterans is enormous and steadily increasing," Dr. Williams declared. "In these days of shorter stays in hospitals after operations, it may be expected that not only outpatients, but very probably a large number of hospital aftercare cases will be sent to private physicians."

He reported that there is a trend, though it is not a definite policy, to concentrate examinations in regional offices of the VA and send outpatient cases to private practitioners.

VA Has 186 Hospitals

Dr. Williams said that the Veterans Administration will have shortly a total of 186 hospitals which will enable it to care for approximately 150,000 patients. The other veterans, he said, will have to be hospitalized privately, under authorization from the VA.

The VA is doing everything it can, Dr. Williams said, to keep at a minimum all backlogs of examinations and outpatient treatments of veterans. It is therefore calling upon the civilian practitioners to help clear these backlogs as soon as they develop. It is left to the discretion of the chief medical officer and of the regional office of the VA to determine when a backlog warrants the allocation of patients to civilian practitioners and when authorizations for examinations and outpatient treatment by these civilian doctors shall be given. Dr. Williams also described the problem that the VA had in setting up fee schedule forms and presented some of the latest developments in this phase of the program. The VA, he said, is now working on a plan to set up a method of determining fees in terms of work units rather than in dollars. He said that if, for example, it requires five units to open a boil, it would perhaps require 100 units to perform an appendectomy. This system of work units will enable the VA to set up a comparative fee rating for the various medical services listed on the schedule and later to determine the worth of a unit.

Briefly, Dr. Williams summed up, the VA plans "to create a fee schedule form which it hopes will be generally acceptable throughout the nation, which will omit no important medical service, which will state items clearly and concisely and which will leave no doubt as to the services meant by each item."

Dr. Hilleboe's talk on "The Hill-Burton Hospital Survey and Construction Act" was the concluding discussion topic. In his talk, he said that the significance of this Act was far reaching. For the first time, he said, we are building our hospitals according to a long-range plan, based on a survey of need.

"Previously," declared Dr. Hilleboe, "hospitals have cropped up like mushrooms with no community planning and no assurance that the community can continue to support them. This has meant tremendous waste of money and potential service. This Act provides assurance that that will not happen again."

Physicians Have Great Responsibility

Dr. Hilleboe told the doctors present that they must accept a good share of the responsibility for the successful carrying out of the program authorized by the Act. He said that communities are looking to doctors for guidance in hospital planning and the U. S. Public Health Service is looking to them for co-operation and understanding, so essential to the success of the program, a program, which, he concluded, "will provide the people of this country with the hospital and health facilities which they need in order to enjoy to the fullest, the American way of life."

Appointed this year were the following persons to serve on the committees in carrying out

(Continued on Page 1260)

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*RESEARCH
IN THE SERVICE
OF MEDICINE*

(*Continued from Page 1258*)

the work of the conference:

On the Auditing Committee, Dr. McCarthy appointed Mr. M. C. Smith of Nebraska to serve as Chairman, to be assisted by Miss Mary McCord of Iowa and Mr. C. H. Crownhart of Wisconsin. To the Nominating Committee, Dr. J. C. Parsons, Iowa, Chairman and Drs. V. E. Ekblad, Wisconsin, and L. W. Larson, North Dakota. To the Resolutions Committee, Dr. W. A. Coventry, Minnesota, Chairman, and Drs. F. L. Rogers, Nebraska, and H. R. Brown, South Dakota.

Among the resolutions drawn up by the Resolutions Committee and unanimously adopted by the Conference delegates were four commending the American Medical Association. One mentioned the Board of Trustees and its action to develop a more effective public relations program for the Association, another praised the forthright action of the AMA in establishing a Division of Prepayment Medical Care Plans, another thanked the AMA for providing such excellent speakers and expressed regret that General George F. Lull, who had been invited to address the Conference, had been unable to attend, and a fourth expressed appreciation to the AMA for its efforts in developing regional conference such as the one held in conjunction with the North Central Medical Conference.

One resolution called for greater consideration of the problem of the shortage of general practitioners and placed the responsibility on those in charge of medical education.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. Dubois, M.D., Secretary

Two Minneapolis Women Plead Guilty to Criminal Abortion

Re. State of Minnesota vs. Mae C. Johnson and Blanche Bogetz, also known as Blanche Hanson, also known as Blanche Williams.

On September 6, 1946, Mrs. Mae C. Johnson, forty-seven years of age, 2222 Queen Avenue North, Minneapolis, and Mrs. Blanche Bogetz, thirty-eight years of age, 4544 Lyndale Avenue South, Minneapolis, each entered a plea of guilty in the District Court of Hennepin County to an information charging them with the crime of abortion. The abortion was performed by the defendant Johnson on a twenty-year-old married Minneapolis woman, at the home of the defendant Bogetz. The abortion was performed on July 27, 1946, and the sum of $150 was paid the defendants. The abortion was performed by means of a catheter that perforated the uterus and was found in the patient's lower abdomen. The patient was admitted to a Minneapolis hospital in critical condition. Following immediate surgery for the removal of the catheter, the patient had a successful recovery.

On October 15, the Hon. John A. Weeks, Judge of the District Court of Hennepin County, sentenced the defendant Johnson to a term of one year in the Minneapolis workhouse. The sentence was stayed and the defendant placed on probation for one year. On October 19, 1946, the Court made a further order permitting the defendant Johnson to leave the State of Minnesota for the purpose of being married and residing in Chicago, Illinois. On November 14, 1946, Judge Weeks sentenced the defendant Bogetz to a term of one year in the Minneapolis workhouse and stayed the sentence for a period of one year. The defendant Bogetz was placed on probation and one of the conditions of her probation is that she pay all the hospital and medical expense occasioned by the criminal abortion. The defendant Bogetz has a previous criminal record under the name of Blanche Williams. On August 9, 1932, the defendant Bogetz, then known as Blanche Williams, entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of forgery in the second degree. She was sentenced to the Women's Reformatory at Shakopee according to law and placed on probation. She violated her probation and on November 10, 1932, the probation was revoked and the defendant served three and one-half years in the Women's Reformatory.

Neither defendant holds any license to practice any form of healing in the State of Minnesota.

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Penicillin Calcium Eye Ointment: 3.54 Gm. tubes. Each gram contains 1,000 units of penicillin calcium in a base consisting of white petrolatum, U. S. P., 60 per cent and liquid petrolatum, U. S. P., 20 per cent and lanolin anhydrous, U. S. P., 20 per cent.

—New and Nonofficial Remedies, JAMA, November 2, 1946.

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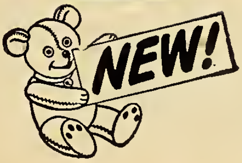

LOOK FOR THE RED-AND-WHITE LABEL

In Memoriam

NATHAN J. BRAVERMAN

Dr. Nathan J. Braverman of Duluth died October 16, 1946, at the age of forty-four.

Dr. Braverman was born in New York City in 1902 and came to Duluth in 1911. He graduated from Central High School in Duluth in 1920 and received his M.D. degree from the University of Minnesota Medical School in 1927. After serving an internship at the Buffalo City Hospital, Buffalo, New York, he began practice in Duluth in 1928.

Dr. Braverman served as captain with the U. S. Army Medical Corps for two years at Fort Bragg, North Carolina; Stark General Hospital, Charleston, South Carolina, and Lawson General Hospital, Atlanta, Georgia.

He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations. He is survived by his widow, a son Michael, and a daughter Joan.

FRANK T. BRIGHAM

Dr. Frank T. Brigham of Watkins, Minnesota, died September 5, 1946, following a long illness.

Dr. Brigham was born at St. Cloud, Minnesota, April 18, 1880. He attended school at St. Cloud and was graduated from the University of Minnesota Medical School in 1905. After spending a year at the Mayo Clinic, he practiced for one year at Two Harbors before moving to Watkins.

He was a member of the Kandiyohi-Swift County Medical Society and the Minnesota State and American Medical Associations.

HENRY T. FOSHAGER

Dr. Henry T. Foshager of Clara City, Minnesota, was killed in an automobile accident October 19, 1946.

Dr. Foshager was born July 13, 1881, at Pennock, Minnesota. He attended St. Olaf Academy and St. Olaf College, Northfield, Minnesota, graduating in 1905. He obtained his medical degree from the University of Minnesota Medical School in 1909. After interning a year at Ancker Hospital, Saint Paul, he practiced at Ipswich, South Dakota, from 1910 to 1912 and at Willmar, Minnesota, from 1912 to 1914. In 1914 he opened an office in Clara City. He was mayor of Clara City in 1917 and 1918 and at one time served as health officer.

On August 7, 1918, Dr. Foshager married Gertrude Habstritt of Clara City, who with a brother, John,

(Continued on Page 1266)

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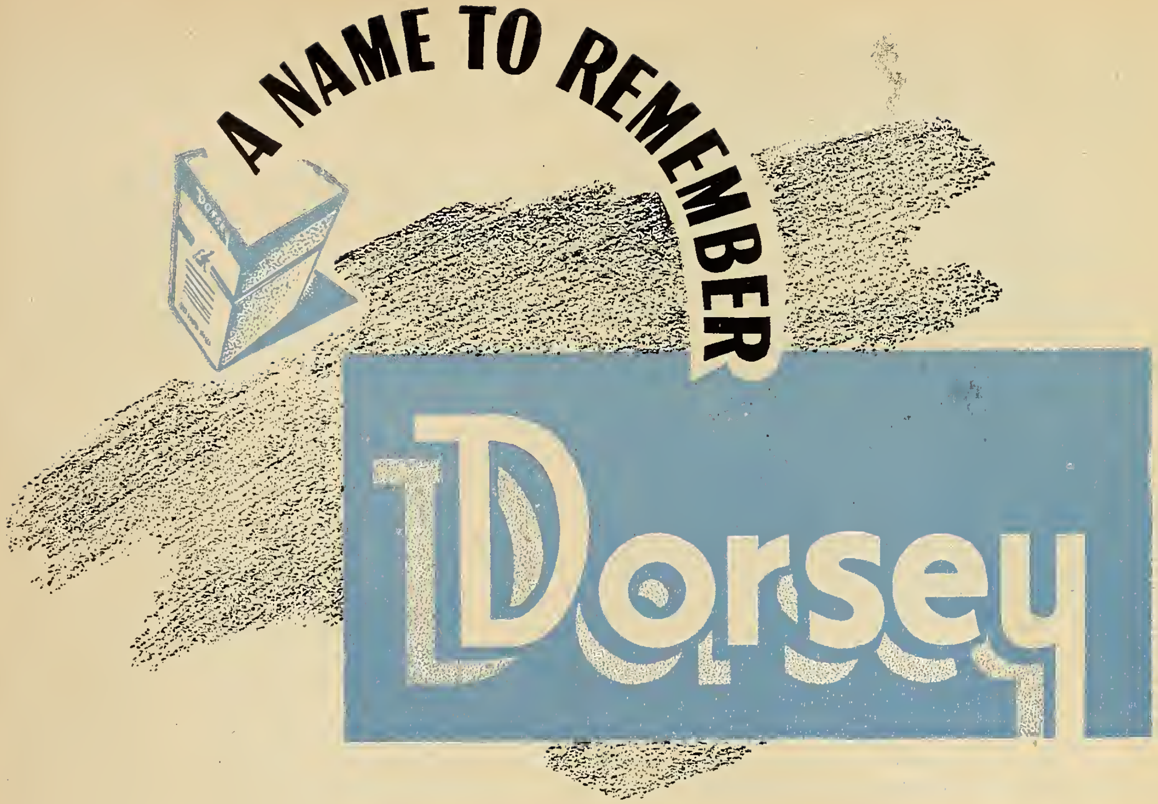

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Reports and Announcements

MEDICAL BROADCAST FOR DECEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, and the University of Minnesota School of the Air.

December		
3— 4:45	WCCO	The Nurse in the Operating Room
4—11:00	KUOM	A Keen Sense of Hearing Makes for Alertness
5—4:45	WCCO	Tubal Deafness
7—11:30	KUOM-KROC KFAM	Medicine in the News
10— 4:45	WCCO	Care of Sick Children
11—11:00	KUOM	Suitable Clothes Help Us To Forget Ourselves
12— 4:45	WCCO	Otosclerosis
14—11.30	KUOM-KROC KFAM	Medicine in the News
17— 4:45	WCCO	Caring for the Aged
18—11:00	KUOM	Foods Serve Three Main Purposes
19— 4:45	WCCO	Nerve Deafness
21—11:30	KUOM-KROC KFAM	Medicine in the News
24— 4:45	WCCO	Medical and Hospital Progress in 1946
26— 4:45	WCCO	Dentistry in 1946
28—11:30	KUOM-KROC KFAM	Medicine in the News
31— 4:45	WCCO	Outpatient Work

UROLOGY AWARD

The American Urological Association offers an annual award "not to exceed $500" for an essay (or essays) on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

For full particulars write the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before May 1, 1947.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Statler, Buffalo, New York, June 30-July 3, 1947.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

At the regular meeting of the Minnesota Society of Neurology and Psychiatry held at the Town and Country Club in Saint Paul on November 12, Drs. Russell A. Anthony, Joe R. Brown, Clifford O. Erickson, and Donald W. Hastings, of Minneapolis, Dr. Francis J. Braceland, of Rochester, and Dr. Burton P. Grimes, of St. Peter, were admitted to active membership.

The program for the meeting included (1) "The Heirens Murder Case," presented by Dr. William H. Haines, Director of the Behavior Clinic of the Criminal Court of Cook County, Illinois, and (2) "The Psychiatric and Psychological Aspects of Experimental

(Continued on Page 1268)

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(Continued from Page 1262)

and a sister, Mrs. Lucinda Olson of Willmar, survives him.

He was a member of the Camp Release Medical Society, the Minnesota State and American Medical Associations.

HARRY T. FROST

Dr. Harry T. Frost of Wadena, Minnesota, died October 27, 1946, after having a heart ailment for two years.

Dr. Frost was born at Rothsay, Minnesota, December 7, 1894. He took his premedical work at Hamline University in Saint Paul and obtained his medical degree from Northwestern University Medical School, Chicago, 1919. He interned at the Minneapolis General Hospital and practiced for five years at Hallock, Minnesota. He was also associated with the Crookston Clinic for a year before opening an office at Wadena. At one time he took postgraduate work at the New York Postgraduate School and at the New York Eye Infirmary. He had been associated with the Wadena Clinic as a specialist in eye, ear, nose and throat for the past twenty-two years.

Dr. Frost is survived by his widow and two sons, Duane and Pat, both students at the University of Minnesota.

JULIUS ADOLPH HIELSCHER

Dr. Julius A. Heilscher of Mankato passed away October 9, 1946. He was eighty-two years old.

Julius Hielscher was born October 21, 1864, in a log hut at the present location of Le Center, his parents having come to Minnesota in May, 1856. He graduated from Northwestern College at Naperville, Illinois, in 1888, and from the University of Minnesota Medical School in 1891, beginning practice the same year in Mankato.

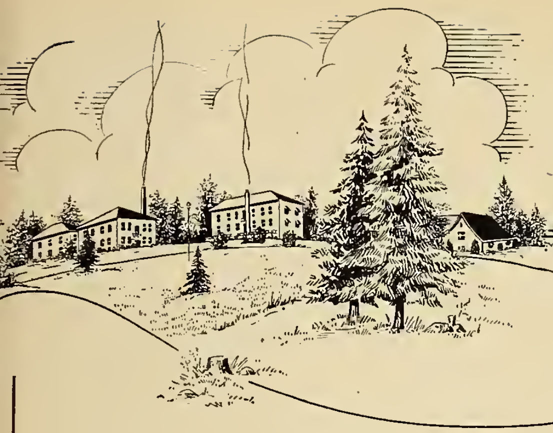
Dr. Hielscher was active in building up the community of Mankato, having had a share in the ownership of the Mankato Linseed Oil Company, the Standard Brewing Company and the International Harvester plant. In 1906 he was one of the organizers of the American State Bank of Mankato, of which he was vice president at the time of his death. In 1937 he built the present Medical Block.

Dr. Hielscher was at one time health officer of Mankato, served for two years on the library board and for six years on the school board. In 1896 he was elected alternate delegate to the national Democratic convention and was present when William Jennings Bryan made his famous speech, "The Crown of Thorns and the Cross of Gold."

He was a member of the Blue Earth County Medical Society, the Minnesota State and American Medical Associations.

On May 2, 1910, Dr. Hielscher married Dr. Helen Hughes, who maintained an active practice in Mankato until her death in 1935. She was one of the women

(Cotinued on Page 1268)



Glenwood Hills Hospitals

Glenwood Hills Hospitals Association is building its physical plant to meet modern times and the wishes of the physicians of psychiatric disorders.

Many physicians favor the concept of isolation as the first essential in treatment.

Glenwood Hills Hospitals are now operating seven separate units which afford this type of isolation.

The buildings are situated on fifty acres of beautifully elevated land. Only ten minutes from Minneapolis loop, the hospitals have all the advantages of a rural setting. Facilities are available to all reputable members of the medical profession.

For the Treatment
of NON-SURGICAL
and NON-INFECTIOUS
DISEASES

Operated in connection with HOMEWOOD HOSPITAL

School of Psychiatric Nursing

PSYCHIATRIC NURSING
ONE YEAR COURSE
OFFERED TO
GIRLS OVER 17 YEARS
TUITION FREE
REQUIREMENTS—
GOOD HEALTH
FINE CHARACTER
HIGH SCHOOL EDUCATION

Glenwood Hills Hospitals Association offers to a limited number of qualified girls a one-year course in the specialty of psychiatric nursing.

With the value of trained psychiatric nurses being recognized more and more each year, there is an ever-increasing demand for nurses who have acquired an understanding of these special patients, nurses who are invaluable in bettering the efficiency and quality of psychiatric treatment.

Class pin and diploma awarded on completion of course.

Classes start in January, June and September

Write for particulars. Director, School of Nursing

Glenwood Hills Hospitals, 3501 Golden Valley Road, Route Seven, Minneapolis, Minnesota

(Continued from Page 1266)

responsible for the organization of the American Legion Auxiliary in the United States.

In 1917, at the age of fifty-two, Dr. Hielscher was commissioned a captain in the medical corps of the U. S. Army, served in the second officers training camp at Fort Snelling and sixteen months overseas in France, and was discharged as a major.

PHILIP ARZT KEES

Dr. Philip A. Kees, formerly of Saint Paul, was fatally injured in an automobile accident in Springfield, Massachusetts, and died November 4, 1946, at the age of thirty-eight.

Dr. Kees was born in Saint Paul and attended the Universities of Minnesota and Pennsylvania.

He spent four years in the army and was wounded three times in action. Besides the Purple Heart and bronze clusters, he was awarded the Bronze Star and the Silver Star. Upon his discharge he held the rank of major.

Dr. Kees is survived by his widow and three children and by his parents, Mr. and Mrs. George A. Kees of Saint Paul.

WILLIAM EDWARD PATTERSON

Dr. William E. Patterson, Minneapolis, died October 30, 1946, at the age of seventy-one.

Dr. Patterson was born at Clarkesville, Iowa, October 7, 1875. He studied at the University of Iowa but obtained his medical degree from the University of Illinois in 1900.

He practiced at Greene, Iowa, from 1900 to 1914, and at Waterloo, Iowa, from 1916 to 1917, before coming to Minneapolis in 1917. He specialized in eye, ear, nose and throat, and helped organize a group of which he was a member.

Dr. Patterson was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and the American College of Surgeons. He was on the faculty of the University of Minnesota Medical School.

He is survived by his widow; a daughter, Mrs. J. Webb Hedin, and a son, Max E., all of Minneapolis.

MATHIAS SUNDT

Dr. Mathias Sundt of Minneapolis died October 21, 1946, at the age of sixty-three.

Mathias Sundt was born in Vooge, Norway, December 10, 1882, and came as a child to Madelia, Minnesota, where he attended public school. He obtained a B.A. degree at the University of Minnesota in 1906 and his M.D. degree in 1909. After serving an internship at Ancker Hospital, Saint Paul, he did postgraduate work in the Department of Pathology at the University of Minnesota Medical School in 1910-1911. He practiced at Hanska, Minnesota, from 1911 to 1920, when he took a postgraduate course at the Postgraduate Hospital in Chicago, specializing in x-ray and gastro-enterology. He began practice in gastro-enterology in Minneapolis in 1920, and had practiced there since that time.

Dr. Sundt was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He was a member of Nu Sigma Nu medical fraternity.

He is survived by his wife, a son Donald, a daughter, Mrs. Ruth Comstock, and three brothers.

C. M. TIERNEY

Death came to Dr. C. M. Tierney of Harmony, Minnesota, on October 5, 1946, following a four years' illness.

Dr. Tierney was born at New Hampton, Iowa, August 11, 1881. He obtained his medical education at the University of Iowa Medical School, graduating in 1906.

Dr. Tierney was a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations. He was well known in the Harmony and Granger vicinity, having practiced at Granger from 1906 to 1928 and having served as president of the Granger bank for many years.

He is survived by his widow, Myrtle Case Tierney, and a brother, George, of Minneapolis.

CHARLES O. WRIGHT

Dr. Charles O. Wright of Luverne, Minnesota, passed away on October 19, 1946, at the age of eighty-two.

Charles Wright was born May 26, 1864. He attended high school in Hastings, Minnesota, studied medicine at the Minnesota Hospital College and obtained his M.D. degree from the University of Minnesota Medical School in 1890. He was a railway surgeon in the employ of the Northern Pacific Railway in Montana for a year following graduation and practiced at Kasson, Minnesota, from June 1891, to September 15, 1898. He then moved to Luverne, where he had since practiced, having been at one time city and county health officer.

On April 1, 1940, his friends joined in a celebration of the completion of forty-one years of practice in Luverne.

He was a member of the Southwestern Medical Society, the Minnesota State and American Medical Associations.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

(Continued from Page 1264)

Semistarvation," by Dr. Burtrum C. Schiele.

Officers for the coming year will be: Dr. George H. Freeman, president; Dr. Nathan J. Berkwitz, vice president; Dr. Royal C. Gray, secretary-treasurer.

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Winnetka, Illinois

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offering all forms of treatment, including electric shock.

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WOMAN'S AUXILIARY

Holiday Greetings to all Medical Auxiliary Members, with best wishes for the New Year.

MRS. M. S. HENDERSON, *President.*

East Central Minnesota

Members of East Central Minnesota Medical Auxiliary and their husbands met for dinner on October 25, 1946, at Princeton, Minnesota.

Dr. A. V. Stoesser of Minneapolis spoke on "Contagious Diseases."

A business meeting and social hour followed at the home of Dr. and Mrs. W. R. Blomberg.

Hennepin County

Hennepin County Medical Auxiliary honored new members and officers on October 4, 1946, at a tea at the home of Mrs. H. E. Hoffert, 4624 Wooddale Avenue, Minneapolis.

A musical program was given by Julia Denecke, flutist, and Constance Lane Anderson, pianist.

The fourteenth annual sale of articles made by patients at Glen Lake Sanatorium was held at The Dayton Company, on November 7 and 8, under the direction of Mrs. J. K. Moen and Mrs. J. M. Neal. Proceeds of the sale, in the amount of $2,623.45 will go to the patients who contributed the articles.

On November 14, fifty-six auxiliary members gave an entire day to preparing the annual Christmas seal letters for mailing directed by Mrs. D. Kirk Pollock, chairman.

Ramsey County

Mrs. Melvin Henderson of Rochester, president of the Woman's Auxiliary of the Minnesota State Medical Association, was guest of honor at the opening meeting of the Ramsey County Medical Auxiliary, October 28, at the home of Mrs. K. C. Wold, 1035 Summit Avenue, Saint Paul.

Leona Scheunemann, Civic Opera star, was featured on the program.

Mrs. Wold and Mrs. O. I. Sohlberg have chosen Friday, December 13, as the day for the auxiliary to take charge of the Christmas Seal booths for the Ramsey County Public Health Association.

Mrs. Andrew Christiansen, 2019 Bayard Avenue, Saint Paul, is the newly elected president of Ramsey County Medical Auxiliary.

Rice County

The first fall meeting of the Rice County Medical Auxiliary was held at the home of Mrs. Charles M. Robilliard, Faribault.

Mrs. F. W. Stevenson, president, and Mrs. Norman Lende, secretary-treasurer, were re-elected to office.

Three gift subscriptions to *Hygeia* and two subscriptions to the *Bulletin* were donated. A $7.50 cash contribution was also presented to the Cannon Falls Sanatorium.

◆ Of General Interest ◆

Dr. Otto B. Fesenmaier, New Ulm, is now located in his new office at 11½ North Minnesota Street.

* * *

Dr. Robert B. Bray, chief of staff at the hospital in Biwabik, has announced the appointment of Dr. Sidney C. Blackmore, of Minneapolis, as his assistant.

* * *

Dr. Thomas A. Lowe, South Saint Paul, has been in Detroit, where he attended the convention of the International College of Surgery.

* * *

Dr. Chester L. Oppegaard, Crookston, has returned from Chicago where he attended a meeting of the Academy of Ophthalmology and Otolaryngology.

* * *

The appointment of Dr. Clarence Wohlrabe as health officer for North Mankato has been announced by Health Commissioner C. A. Keene.

* * *

Dr. George C. Kimmell, of the Interstate Clinic, Red Wing, was elected president of the Northwest Pediatric Society at the annual meeting held at Bayport, Minnesota.

* * *

Dr. Reinald Johnson, who, prior to his entry into military service, had maintained offices at 35th and Chicago Avenue in Minneapolis, has entered practice in St. Louis Park at 4005 Vernon Drive.

* * *

Announcement has been made of the appointment of Dr. John S. Burleigh, Luverne, as coroner and county health officer. Dr. Burleigh succeeded Dr. Charles Osborne Wright, deceased.

* * *

Dr. Lawrence R. Boies was installed as president by the Hennepin County Medical Association at the meeting in the Medical Arts Building in Minneapolis on October 7.

* * *

The Duluth Board of Education has announced the appointment of Dr. E. Irvine Parson as medical director for the public school system, and Dr. Earl E. Barrett as assistant medical director.

* * *

Dr. B. Niles Batdorf, formerly of Minneapolis and who took Dr. John C. Vezina's practice at Mapleton during the summer while Dr. Vezina was away on a vacation, has opened offices at Good Thunder.

* * *

The Minnewaska Clinic in Starbuck has been sold by the Hospital Clinic Association to Dr. Allen F. Giesen, a member of the clinic staff . Dr. Giesen is planning extensive remodeling of the clinic building as soon as materials are available.

* * *

Dr. Rolf M. Iverson, formerly of Houston, is now associated in practice with Drs. Malcolm Hanson and Cyrus Hansen, with offices in the Medical Arts Building in Minneapolis.

* * *

Dr. E. G. Ahrens of Romeo, Michigan, has succeeded Dr. David O. N. Lindberg as superintendent of the Buena Vista Sanatorium at Wabasha. Dr. Ahrens has been in tuberculosis work for twenty-five years.

* * *

Dr. Maurice Gilbert, of Robbinsdale, has been released from military service and has resumed his practice at 330 West Broadway. Dr. Gilbert served in the army with the rank of captain.

* * *

Dr. Joseph M. Ryan, Saint Paul, has been discharged from military service and has resumed the practice of internal medicine in his offices at 524 Lowry Medical Arts Building.

* * *

The retirement of Dr. James H. Haines as city health officer of Stillwater has been announced for December 31, when his current term will expire. Dr. Haines has filled this office for the greater part of his fifty-one years in practice at Stillwater.

* * *

Dr. Wilson B. Hall, who has been associated with the Student Health Service at the University of Minnesota since his release from military service, has joined Dr. Edwin J. Simons in the practice of medicine at Swanville.

* * *

Marked improvement in a goiter patient treated with radioactive iodine, a byproduct from the atomic pile at Oak Ridge, Tennessee, has been reported by Dr. Cecil J. Watson, professor of medicine at the University of Minnesota.

* * *

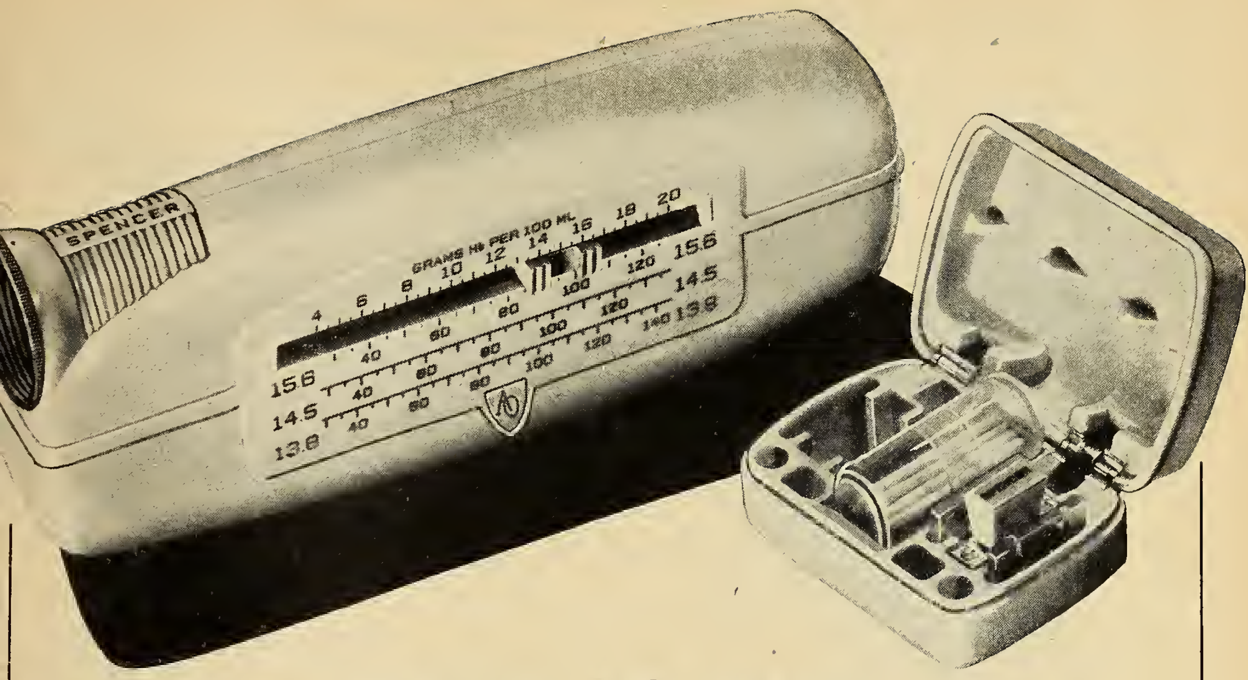
The Northwestern Clinic at Crookston celebrated their twenty-sixth anniversary on October 26 with a dinner party in the Red and Gold Room at the Hotel Crookston. Covers were laid for thirty.

Dr. A. Rydland, who joined the clinic during the year, was a special guest.

* * *

Dr. Reno W. Backus, of the staff of Nopeming Sanatorium, was guest speaker at the second annual school press project luncheon of the St. Louis County Tuberculosis and Health Association held at the Arrowhead Hotel in Duluth on November 7. Dr. Backus's subject was "Fighting the Constant Invader."

(Continued on Page 1272)



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The inexpensive, disposable hemolysis Applicators are the only supplies necessary.

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Item	Price
1000-Hb-Meter outfit, consisting of Hb-Meter, complete with 1 bulb and 2 batteries, in dust-proof pouch; accessory case containing one clip, one double-sided chamber, one chamber cover glass, and a vial of 25 hemolysis applicators	$34.50
1002-Chamber Clip	1.00
1003-Chamber Cover Glass	1.50
1004-Chamber	3.50
1005-Bulb, Mazda No. 233 (with purple bead) MCP.	.10
1006-Battery, standard size C flashlight, MCP.	.10
1008-Dust Pouch	.60
1010-Accessory Case, empty	1.50
1015-Complete Blood Chamber, consisting of clip, chamber cover glass, and chamber	6.00
1025-Transformer, 50-60 cycle, for adapting Hb-Meter to 115 volt A.C. outlet	15.00
1030-Resistance for adapting Hb-Meter to any 115 volt outlet	23.00
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Federal, State, City, or other taxes imposed on the sale, lease, or other transfer, use, or consumption of any article listed herein are to be added to the prices quoted. All prices, deliveries, and terms of sale are subject to change without notice. Orders are subject to prices prevailing at the time of shipment.

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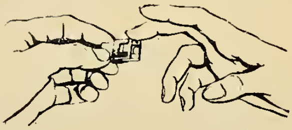
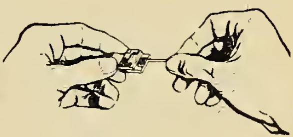
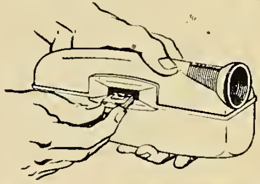
1.
Drop blood sample directly onto open chamber.



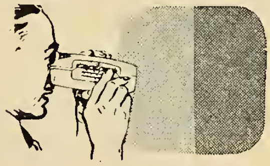
2.
Hemolyze with Hemolysis Applicator until blood change is apparent—approximate time is less than 45 seconds.



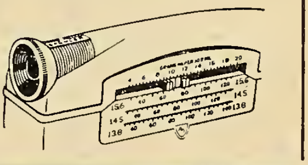
3.
Close chamber by sliding it under cover glass, and insert it in instrument.



4.
Press illuminating switch—observe through eyepiece—move lever until fields match.



5.
Hb Concentration is now read directly from graduated scales. For convenience four scales are provided: (1) grams per 100 ml., (2) percentage scale based on 15.6 grams standard, (3) percentage scale based on 14.5 grams standard, (4) percentage scale based on 13.8 grams standard.



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(Continued from Page 1270)

Dr. Arthur V. Garlock, Bemidji, accompanied by Mrs. Garlock, has been in Chicago where he attended the seven-day instruction course held at the Palmer House under the sponsorship of the Academy of Eye, Ear, Nose and Throat Surgeons. Dr. Garlock is a member of the Academy.

* * *

Dr. Karl H. Pfuetze, medical director and superintendent of the Mineral Springs Sanatorium at Cannon Falls, gave a paper on "The Treatment of Tuberculosis with Streptomycin" before the Missouri Chapter of Chest Physicians in Kansas City on October 6, 1946.

* * *

Dr. Walter C. Alvarez, professor of medicine at the Mayo Foundation, Rochester, was guest speaker at a meeting of Section 2 of the Child Psychology Study Circle at the Groveland School in Saint Paul on November 14. Dr. Alvarez' subject was "Influence of Heredity and Environment."

* * *

Dr. Leonard A. Dwinnell, of Brownton, has joined the staff of the Fergus Falls Clinic. Dr. Dwinnell, who was recently discharged from the army after service in both this country and overseas, is a graduate of the Medical School of Northwestern University, Evanston, Illinois.

Dr. Owen H. Wangensteen, chief surgeon at the University Hospitals, Minneapolis, was presented with an honorary degree of doctor of laws by the University of Buffalo, N. Y., at the celebration of the institution's centennial in October. The program included a paper on gastric ulcers presented by Dr. Wangensteen.

* * *

Dr. Walter R. Ramsey, who has been associated with the Children's Hospital in Saint Paul for many years, has been elected chairman of the Ramsey County Chapter of the National Foundation for Infantile Paralysis, to succeed Dr. James N. Dunn, who will serve as vice chairman.

* * *

Dr. Mario Fischer, Duluth, city health director and treasurer of the St. Louis County Tuberculosis and Health Association, attended the 40th annual meeting of the Minnesota Public Health Association held in Minneapolis on October 25. Dr. Fischer is a member of the organization's executive board.

* * *

The Hennepin County Medical Society held its regular monthly meeting on November 4 at the Medical Arts Building in Minneapolis.

The guest speaker was Dr. Charles H. Rammelkamp, Jr., associate professor of medicine at Western Reserve University, Cleveland, who spoke on "Atypical Pneumonia."

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Duluth 3, Minnesota

A hospital for the care and treatment of Nervous and Mental disorders. Quiet, cheerful environment. Specially trained personnel. Recreational and occupational therapy.

Psychiatrists in Charge
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Have a Coke

When you laugh, the world laughs with you, as they say—and when you enjoy *the pause that refreshes* with ice-cold Coca-Cola, your friends enjoy it with you, too. Everybody enjoys the friendly hospitality that goes with the invitation *Have a Coke.* Those three words mean *Friend, you belong —I'm glad to be with you.* Good company is better company over a Coca-Cola.

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TRADE-MARK

Two Saint Paul men and two from Minneapolis were among the 88 graduates receiving medical degrees at the graduating exercises of Marquette University in Milwaukee, on November 4. Milton Cornwell and Russell N. Fry are the Saint Paul representatives, and Robert P. Jeub and Pohn F. Walsh are from Minneapolis.

* * *

Dr. Fred Wittich, of Minneapolis, and Dr. Bayard Horton, of Rochester, were among the instructors for the one-week course in allergies presented at Jefferson Medical College in Philadelphia.

More than 200 doctors attended the course which was sponsored by the American College of Allergists, many of them taking the work under the GI Bill of Rights.

* * *

Rear Admiral Winchell McK. Craig, neurosurgeon at the Mayo Clinic, was elected fifth vice president of the Association of Military Surgeons at the convention held in Detroit, Michigan.

Dr. Craig was chief of the neurology section of the National Naval Medical Center at Bethesday, Maryland, during the war.

* * *

Dr. C. Dexter Lufkin, formerly in practice at Northfield, has been appointed a member of the staff in the department of chest diseases at the Veterans Hospital in Minneapolis.

Dr. Dexter was recently separated from the navy, where he was a lieutenant commander in a U. S. Naval Hospital in Sampson, New York.

Dr. Willard M. Akins, formerly of Eveleth, has joined the Medical Block Clinic at Red Wing. Dr. Akins, who is a graduate of Gustavus Adolphus College, St. Peter, and the University of Minnesota School of Medicine, entered practice at Eveleth in 1933. During his residence there he served the community as city health officer and deputy coroner of St. Louis County.

* * *

Mutual problems were discussed when the officials of the medical associations of the North Central States—Minnesota, Iowa, Nebraska, Wisconsin, North and South Dakota—met for their annual conference in Saint Paul on November 10. The featured speakers on the program included Dr. Alfred W. Adson, of Rochester, Dr. J. D. McCarthy, of Omaha, and Dr. George F. Lull, of Chicago.

* * *

Dr. John Richard Frisch, whose home is in Winona, completed a four-year accelerated course in medicine at Marquette University and is now serving his internship at St. Mary's Hospital in Milwaukee. Following his graduation from St. Mary's College in Winona, Dr. Frisch enrolled in the Naval V-12 program. When this program was discontinued in February, 1946, he was transferred to the Naval Reserve.

* * *

Dr. Lewis S. Jordan, president of Riverside Sanatorium at Granite Falls, was toastmaster at the fortieth anniversary dinner of the Minnesota Public Health Association at the Nicollet Hotel in Minneapolis on October 25. The principal address was made by Dr.

William A. O'Brien, director of postgraduate medicine at the University of Minnesota, whose subject was "The Evolution of Medicine."

* * *

Dr. Roberts Davies, associate medical director of Nopeming Sanatorium has been made medical director of the Morningside Tuberculosis Hospital at Seattle, Washington. He will assume his office shortly after the first of the year.

According to a United Press report, Dr. Davies was chosen from more than twenty applicants for the position, which carries a salary of $10,000 a year.

* * *

Dr. Leon A. Williams, pioneer Murray County doctor, has sold his practice in Slayton to Dr. Hugh D. Patterson and terminated a half century of medical service to the community. Immediately following the completion of the transfer of the offices to his successor, Dr. Williams left for Rochester to undergo treatment of x-ray burns on his hands, which were sustained during many years of exposure to the rays.

* * *

The War Department has announced the appointment of Dr. Gaylord Anderson, director of the School of Public Heath, University of Minnesota, and Dr. Frank Krusen, professor of physical medicine at the Mayo Clinic, Rochester, as members of a staff of 122 medical consultants to the Secretary of War to devise a program which is designed to aid in "maintaining the healthiest army in the world."

Announcement has been made of the organization of a mental hygiene clinic at Fort Snelling to provide out-patient treatment for veterans suffering from service-connected nervous ailments. Dr. Marvin Sukov, assistant professor of psychiatry at the University of Minnesota, and a former commander in the Naval Reserve Medical Corps, has been made chief of staff at the clinic.

* * *

Dr. Charles F. Medlin, who recently entered medical practice in Truman, has purchased building lots and will begin construction of an office as soon as materials can be obtained.

Dr. Medlin was discharged from the army a few months ago after three years of service. He was overseas for thirty-two months with general surgery and orthopedic assignments in England, Germany and France.

* * *

Dr. Harold S. Diehl, dean of medical science at the University of Minnesota, has been in Washington, D. C., to attend a meeting of the special committee of the U. S. Public Health Service Advisory Council.

Dr. Owen H. Wangensteen, professor of surgery at the University, is also a member of the committee, which consists of twenty-four physicians representing 14 medical schools. Its purpose is to keep the Council advised on the place of cancer in medical school curriculum.

* * *

A fire of undetermined origin in the offices of Dr. David W. Francis in Morristown recently caused dam-

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AMPULES - 1 and 3 cc. (each cc. contains 1½ grains.)
TABLETS - 1½ grains.
ORAL SOLUTION - (10% aqueous solution.)

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ages to furnishings and equipment in excess of $1,000. Apparently starting at several different places in the ceiling at the same time, the flames worked down into the various rooms almost simultaneously. A disrupted switchboard at the telephone exchange, resulting from burned-off connections in the doctor's offices, was responsible for getting the fire department out in double-quick time.

* * *

Dr. Richard N. Sather, who was in charge of Dr. P. C. Peterson's office in Mora, while the latter was in Europe last summer, is now associated with Dr. Peterson in practice.

Dr. Sather is a graduate of the University of Chicago. He served his internship at Ancker Hospital, Saint Paul, where he was also resident physician for a year. For the next two years he was in practice at McIntosh, Minnesota, then entered the Army Medical Corps, where he served for three and a half years and attained the rank of major.

* * *

Dr. James D. Rogers, Rochester, has been elected president of the Association of Fellows in the Mayo Foundation. Other officers chosen are Dr. R. S. Smith, vice president; Dr. J. O. Krueger, Jr., secretary, and Dr. F. B. Whitesell, Jr., treasurer.

Dr. Rogers, after taking office, made the following appointments: social chairman, Dr. E. H. Morgan; athletic chairman, Dr. H. B. Henkel; in charge of the Wilson Club, Dr. F. H. Clark; in charge of the glee club, Dr. J. H. Remington, and Dr. J. T. Small in charge of the band.

* * *

After an absence from his practice in Gaylord of five and a half years, Dr. Adolph Dysterheft reopened his offices there on November 1.

Dr. Dysterheft, who took his medical degree at the University of Minnesota in 1929, has been practicing and operating a private hospital in Gaylord for ten years prior to his induction into the army in 1941. While in service his assignments included duty in the Arctic region, India, and army hospitals in this country. Since his discharge from the army last winter he has been engaged in postgraduate study.

* * *

Dr. Henry Reif, formerly of Saint Paul, has entered practice at St. Cloud in association with Dr. Leonard A. Veranth.

Dr. Reif is a graduate of St. Thomas College, Saint Paul, and he took his medical degree at the University of Minnesota in 1939. Following the completion of an internship and residency at Ancker Hospital, Dr. Reif was in private practice in Saint Paul for a year, when he joined the Army Air Force and served for three years. Since his separation from military service last February, Dr. Reif has been doing postgraduate work in basic science and surgery at the University of Minnesota.

* * *

Dr. Robert T. Petersen, formerly of Minneapolis, is now associated in practice with Dr. Philip L. Halenbeck at St. Cloud. Dr. Petersen, who was separated

. . . . water without minerals is like food without salt

TASTE

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from the armed forces with the rank of major during the early summer, is a graduate of the University of Minnesota, where he took his medical degree in 1940. Following the completion of his internship at West Suburban Hospital at Oak Park, Illinois, he entered practice in Minneapolis and remained there until inducted into military service in 1943. Of forty-four months in the Army Medical Corps, Dr. Petersen was with the European Transport Service for the greater part of the time.

* * *

After thirty-four years as head of the medical department of Swift and Company, South Saint Paul, Dr. George C. Ernest has retired. Before coming to South Saint Paul, Dr. Ernest was head of the medical service at the Swift plant in Omaha for a year and had been with the company in Chicago for about six months prior to his assignment at South Saint Paul.

Dr. Ernest is a graduate of Bellevue College, Bellevue, Nebraska, and of the University of Kansas Medical School. He is a member of the AMA, the Minnesota and the Ramsey County Medical Associations.

After a vacation in Florida, which Dr. and Mrs. Ernest have been planning for some time, they will return to their home in South Saint Paul.

* * *

Drs. Julian Du Bois, John C. Grant and Ralph B. Kettlewell, Sauk Center, are now located in their new clinic building on Fourth Street.

The building, modern in every detail, efficient and comfortable, has twelve rooms on the first floor, in addition to cloak and supply rooms. Eight of the rooms are in units of two so that each doctor has his own office and examining room. A laboratory and x-ray room, accessible from all units, a large waiting room, the business office and the ladies' powder room are on this floor, and there is also a treatment room where minor surgery may be done. In the basement there is a study room, a furnace room and storage space. The walls are soundproof and the building is practically fireproof.

* * *

Specializing in psychiatry and neurology, Dr. Clifford O. Erickson, formerly of Rochester, is now practicing in association with Dr. Harold H. Noran in Minneapolis with offices in the Physicians and Surgeons Building.

Dr. Erickson, who is a Diplomate of the American Board of Neurology and Psychiatry (in psychiatry), was assistant superintendent at the State Hospital at Rochester from 1938 until his induction into the army where he served for fifty-seven months. He was overseas for twenty-three months as chief of the neuropsychiatric section of the 36th General Hospital with assignment in North Africa, Italy and France. At the time of his discharge a year ago, when he returned to Rochester, Dr. Erickson's rank was lieutenant colonel.

* * *

Dr. Hugh D. Patterson, who since his release from military service in March, 1945, has been practicing at

Volga, South Dakota, in association with Dr. A. P. Peeke, has taken over Dr. Leon A. Williams' practice at Slayton, Minnesota.

Dr. Patterson, a graduate of Macalester College, Saint Paul, took his medical degree at the University of Minnesota in 1940. He served as junior intern at Fairview Hospital in Minneapolis and completed his internship at the Southern Baptist Hospital in New Orleans, Louisiana. He was in residency at a hospital in Anoka, Minnesota, for eight months prior to his induction into the navy in 1942. His military assignments included both the South Pacific and Alaskan areas. When discharged from service Dr. Patterson's rank was lieutenant commander.

* * *

The week of November 10 to 16, 1946, was proclaimed as National Hard of Hearing Week by the American Hearing Society, formerly known as the American Society for the Hard of Hearing.

The purpose of the organization, now in its twenty-seventh year and composed of 120 local chapters, is to create and stimulate public consciousness of and interest in, the importance of hearing, the estimated fifteen to twenty million persons suffering from various degrees of curtailed hearing, the importance of prevention and the value of hearing aids. A fund to provide hearing aids for persons unable to pay for their own has been established by the society, but at the present time it is wholly inadequate.

Headquarters for the American Hearing Society are at 1537 Thirty-fifth Street, N. W., Washington 7, D. C.

* * *

Dr. Harvey E. Sisk, who was recently separated from military service, has joined Dr. Rudolph Radabaugh in the practice of medicine at Hastings.

Dr. Sisk was born in Duluth, but he grew up at Rainy River, Ontario, where his parents moved when he was a small boy. He took his premedic work at Teachers College in Superior, Wisconsin, and his medical degree at the University of Minnesota in 1931. Following a year's internship at the Kansas University Hospital, Dr. Sisk practiced for four and a half years in Mazeppa, Minnesota. In 1938 he was appointed medical officer with the Veterans Administration and in 1942 he was commissioned a captain in the Army Medical Corps. He was assigned to the Oteen Army Hospital in North Carolina for a year, after which he was made chief of medical service at Jefferson Barracks, Missouri, with the rank of lieutenant colonel. Dr. Sisk was discharged from service in June, 1946.

* * *

The twentieth and first postwar meeting of the North Central Section of the American Urological Association was held in the Mayo Civic Auditorium in Rochester on October 31 and November 1. About 150 urologists were registered for the opening session and total attendance at the meeting was in excess of 200. Dr. William F. Braasch, of the Mayo Clinic, who was chairman of the arrangements committee, gave the welcoming address. Dr. Charles D. Creevy, of Minneapolis, presented a paper at the opening session, and Drs. Frederick

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N. Cook and Deward O. Ferris, Rochester, took part in the afternoon discussions.

An interesting feature of the program was the urogram clinic conducted by Drs. Braasch, Cook, Gershom J. Thompson, John L. Emmett, Thomas L. Pool and Laurence F. Greene, all of the Mayo Clinic.

At the elections next day Dr. Creevy was made a member of the board of directors of the Association.

* * *

The annual meeting of the Southwestern Minnesota Medical Society was held at Worthington on November 1 and officers for the ensuing year were elected: Dr. David J. Halpern, of Brewster, is the new president; Dr. Frederick L. Schade, of Worthington, president-elect; Dr. John Lohmann, Pipestone, vice president; Dr. Byron O. Mork, Jr., of Worthington, secretary-treasurer. Dr. Sidney A. Slater, of Worthington, and the president, Dr. Halpern, were elected to the House of Delegates of the State Association. Dr. Elmer W. Arnold, of Adrian, and Dr. Leon A. Williams, of Slayton, to the State Board of Censors. The alternate delegates are Dr. Schade and the secretary, Dr. Mork.

Six new members were admitted to the society at the meeting. They are Drs. Bernard Karleen and Harold Christianson, Jackson; Dr. John Nickerson, Heron Lake; Dr. Hugh D. Patterson, Slayton; Dr. John Burleigh, Luverne, and Dr. Leslie A. Laikola.

* * *

In an effort to provide their respective communities with a more comprehensive medical service, Drs. Donald G. Mahle, Plainview, Earl W. Ellis, Elgin, Clarence G. Oschner, Bertram J. Bouquet and L. M. Ekstrand, Wabasha, have organized a community clinic with offices in Wabasha.

A pharmacy under the management of George Carroll will be operated in conjunction with the clinic. Mr. Carroll is a registered pharmacist and was formerly with the Rademacher Drug Company in Winona for the past twenty years.

All the associated physicians have been practicing in their present locations for the past ten years, with the exception of Dr. Ekstrand, who is a newcomer to the community. A native of Waukegan, Illinois, Dr. Ekstrand is a graduate of Lake Forest College, Lake Forest, Illinois, and the University of Illinois College of Medicine. Following the completion of his internship at Charity Hospital in New Orleans, he entered the navy and served in both the European and Pacific Theatres until his release from service last June after thirty months of duty.

* * *

Dr. Leonard Harriman, who has been practicing medicine at Howard Lake for the past thirty-two years, was the guest of honor at a testimonial dinner sponsored by the Howard Lake American Legion and Auxiliary in celebration of his seventy-third birthday.

Dr. Harriman served in the Spanish-American war, then studied medicine at the University of Illinois, where he graduated in 1911. He entered practice in 1914 at Howard Lake and has since taken an active part in community affairs. He was president of the school board for several terms and at the present time is president of the Security Bank of Howard Lake

In recalling his first years at Howard Lake, Dr. Harriman said that often it was rugged going, as during the influenza epidemic in 1918 when he was the only doctor in the entire district, and he went without sleep for days at a time except for naps on the floor of his bobsled while he was being driven from one patient to another.

* * *

The Minnesota Public Health Association is celebrating its fortieth anniversary. The association was founded in 1906, under the name of the Minnesota Association for the Prevention and Relief of Tuberculosis, by a group of interested physicians and was supported by private subscriptions from 1906 until 1909, when the first Christmas Seal sale was conducted in Minnesota. The name of Dr. H. Longstreet Taylor will ever be associated with the organization and early expansion of the association. As a result of his early efforts when he campaigned the state at his own expense emphasizing the need of tuberculosis sanatoria, he has been known as the Trudeau of Minnesota. In 1914, the association expanded its field of activities and changed its name to the Minnesota Public Health Association, although through the years its main objective has been the stamping out of tuberculosis. How well the efforts of the organization have borne fruit is testified by the state-wide reduction in the tuberculosis mortality from 105 per 100,000 population to twenty-five. The present objective of tuberculin test-

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ing of the entire population and x-ray all positive reactors should solve the problem of tuberculosis in the state.

* * *

After sixty years of continuous medical practice in Saint Paul, Dr. Ezra C. Eshelby has closed his offices and retired. Beginning his "first real vacation in years" with a hunting trip, Dr. Eshelby expects to continue it by spending the winter just visiting around with his children, two sons and two daughters.

Dr. Eshelby, who is a graduate of the University of Michigan and the University of Toronto, Canada, had no idea of settling in Saint Paul when he first arrived there. Instead, he had merely stopped off for a short visit with a friend, while on his way from Toronto to Kansas City, where he intended to enter practice. However, the appeal of Saint Paul was so strong the young doctor changed his plans and opened an office at Manitoba and Rice Streets.

In reminiscing on his early days in practice, Dr. Eshelby recalled that during his first year in Saint Paul the city experienced one of the worst epidemics of influenza in its history. There were only two small hospitals to service the city of 70,000, and before the epidemic ended in the spring it had taken a toll of several hundred lives.

* * *

The Minneapolis Surgical Society announces the following change in membership requirements as adopted at their meeting on October 3, 1946.

As originally stated under Article II, Section 2 of the constitution, candidates for active membership must be practicing in Minneapolis. Only Fellows of the American College of Surgeons practicing general surgery or general surgeons who have fulfilled the minimum requirements of the American College of Surgeons and are limiting their practice to surgery are eligible for election as active members. The active membership shall be limited to fifty.

Under the amendment the requirements are:

Candidates for active membership must be practicing in Minneapolis. Candidates for active membership who have graduated in medicine in 1936 or subsequently must first be certified by the American Board of Surgery. All candidates for active membership must be Fellows of the American College of Surgeons in good standing and must be limiting their practices to general surgery.

Candidates for active membership must have published at least one surgical paper in a recognized medical journal. Active membership must be limited to fifty.

* * *

Dr. Herman E. Hilleboe, of Saint Paul, who has been chief of the Tuberculosis Control Division of the U. S. Public Health Service since its organization in 1944, has been appointed associate chief of the Bureau of State Services with the rank of Assistant Surgeon General.

Dr. Hilleboe received his B.S. and M.D. degrees from the University of Minnesota, the latter in 1930. In 1935 he took his Master's Degree in Public Health at Johns Hopkins School of Hygiene and Public Health.

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He has been engaged in public health work ever since, serving successively as director of the Tuberculosis Division of the State Board of Health; director of the Division of Tuberculosis and Services for Crippled Children of the Minnesota State Board of Control; chief of the medical unit in the State Department of Social Welfare. Dr. Hilleboe was appointed assistant surgeon in the U. S. Public Health Service in 1939, specializing in the study of tuberculosis, and he was later assigned to study control of the disease in England, Scandinavia, Germany and France.

In his new position, Dr. Hilleboe will have supervisory responsibility for the Tuberculosis Control Division and the newly created hospital facilities of the U. S. Public Health Service.

* * *

Dr. George Reineke, who celebrated the fiftieth anniversary of his practice in New Ulm last June, was guest speaker at a recent meeting of the local Rotary Club. Entertaining his audience with recollections of his early days in medicine, Dr. Reineke told of how it took him two days by horse and buggy to come to New Ulm from his home town of Waseca, a trip he now makes by automobile in two hours. He said that there was a housing shortage then just as acute as that which the nation is experiencing today. In fact, the only available shelter he could find was one room and he had no choice but to rent it and put in his own partitions to separate it into an office. Of course there were no telephones, and the roads, poor at any time, were a nightmare in bad weather.

An ordinary dwelling served as the only hospital quarters, with one of the bedrooms used for an operating room. There were no trained nurses and the Order of Sisters operating the hospital had numerous other duties besides caring for the patients. The hospital had so little equipment that Dr. A. L. Fritsche, who was then practicing in New Ulm, never went anywhere without his own sterilizer.

Blood letting and cupping were the favored treatments for most ills, according to Dr. Reineke, and leeches were used for everything from common headache to convulsions. An appendectomy, with chloroform as anesthetic, required not less than two hours to perform.

* * *

HOSPITAL NEWS

Dr. Herbert Heise, Winona, was elected a member of the board of directors of Calvary Lutheran Hospital in Winona at the meetings held to complete plans for a fund-raising campaign to meet the cost of completion of the building.

* * *

The mortgage of St. Luke's Hospital at Thief River Falls was burned at a dinner given by the hospital association at Pine Cave on October 23, final payment having been made on the original obligation of $27,000.

Ray Amberg, superintendent of the University Hospitals, was the principal speaker. Mr. Amberg reviewed hospitalization progress over the last seventy years and said that it had gone hand in hand with medical advancement.

Doctors Edward and Theodor Bratrud also spoke and recommended that St. Luke's hereafter should be operated as an open community hospital.

* * *

St. Barnabas Hospital, Minneapolis, now in its diamond jubilee year, celebrated the founding of the hospital by Reverend David B. Knickerbacker, rector of Gethsemane Church, in 1871, with a special service at Gethsemane Church at 11 A. M., on Sunday, November 17.

In St. Barnabas' seventy-five years of operation it has cared for 204,853 patients and it now averages about 12,500 a year.

* * *

The Legion of Merit citation has been awarded to Lieutenant Colonel Edward T. Evans, of Minneapolis, by the United States Surgeon General for meritorious achievement.

Dr. Evans served as chief of the orthopedic section of the U. S. General Hospital 26 in North Africa, and Italy and in the same capacity at the Billings General Hospital in Indianapolis.

* * *

CORRECTION

Minnesota Medicine regrets having erroneously reported in a recent issue the removal of Dr. Carleton G. Kelsey, of Hinckley, to Truman. The error originated in the identical initials of Dr. Kelsey and his son, who is a dentist in practice in Truman.

* * *

GENERAL PRACTITIONER AND SPECIALIST

(Continued from Page 1237)

we can do about it, even if we wanted to. We must get along together. We cannot become warring factions. Let the specialist realize that no specialty can stand alone, that it is integrated with medicine as a whole, and that patients are people, and must be viewed as a whole. Let him then continue to support the general practitioner, to work with him, and to make the general practitioner's problems his own. Let the general practitioner, through his new organization, better his performance and come to organized medicine as a whole for help in his worth-while objectives.

Above all, let us maintain our unity and fight together to maintain freedom of practice. Let us have good fellowship. The practice of medicine under these conditions will be 100 per cent more fun, and the public will continue to receive the finest care it is possible to give.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

VICTORY OVER PAIN. Victor Robinson, M.D. 338 pages. Illus. Price, $3.50. New York: Henry Schuman Co., 1946.

This is a history of anesthesia from the beginning to the end of the first century of ether; it is modern enough to include chapters on endotracheal anesthesia, continuous caudal analgesia, and curare. Its style is popular and nontechnical; it can be read with pleasure by the layman and the young student and with profit by the practitioner and specialist. The lives and personalities of Davy, Hickman, Long, Wells, Jackson, Morton, Guthrie, Simpson, Snow, and others, are set down in an interesting fashion. It is another history of anesthesia, but accurate, well told, and easily read.

Frank Cole, M.D.

A MEMOIR TO THE ACADEMY OF SCIENCES AT PARIS ON A NEW USE OF SULPHURIC ETHER (1847). W. T. G. Morton. Foreword by John F. Fulton, M.D. 24 pages. Price, $1.50. New York: Henry Schuman Co., 1946.

Morton's "Memoir on Sulphuric Ether," never before separately reprinted, was written in July, 1847, and originally published in November of that year, in French. It was prepared after Jackson had twice sent memoranda to the Academy, claiming for himself credit for the discovery of surgical anesthesia and "represents the most carefully considered of all of Morton's statements in the ether controversy." For those who will read critically, there are such incidents as the dog's ten-foot jump. It is extremely interesting to listen to his account of his quarrel with Jackson in his own words. "All that he communicated to me," says Morton, "I could have got from other well-informed chemists, or from some books." He closes with an apology for his efforts to capitalize on the discovery. "In justice to myself, I should say that I took out my patent early, before I realized how extensively useful the discovery would be."

The reprinting of the Memoir is indeed timely and will be welcomed by many.

Frank Cole, M.D.

THE CENTENNIAL OF SURGICAL ANESTHESIA—AN ANNOTATED CATALOGUE. John F. Fulton, M.D. and Madeline E. Stanton, A.B., Historical Library, Yale University School of Medicine. 102 pages. Illus. Price, $4.00. New York: Henry Schuman Co., 1946.

The authors have made a definitely important contribution to the history of the discovery of surgical anesthesia in offering an unbiased account of the story in the form of a chronological listing of the historical articles, famous and obscure, dealing with the different agents, methods, and investigators. The contents of each work are described and in many cases abstracted or even quoted. Thus, the account of the discovery of surgical anesthesia is presented at times in the exact words of Wells, Horton, and Jackson. Together with this, the

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section dealing with each agent, method, and discoverer is preceded by a concise well-written account of the story the succeeding papers are to tell.

This catalogue is a valuable addition to the library of anyone interested in the history of anesthesia. It covers the period from 1601 to 1875 and thus deals largely with the Long-Wells-Morton-Jackson-Simpson epoch. The histories of Fülop-Miller, Keys, Raper, Bankoff, and Robinson are referred to, and a bibliography is included.

Frank Cole, M.D.

OPERATIVE GYNECOLOGY. Richard W. Te Linde, M.D. 751 pages. Illus. Price, $18.00. Philadelphia: J. B. Lippincott Co., 1946.

Dr. Te Linde's long experience at the Johns Hopkins Hospital and the up-to-date report from that highly regarded clinic, make this book a welcome addition to gynecological literature. The names of Kelly, Halsted and Richardson appear frequently in the references, yet not to the exclusion of the best contributions from other schools.

The volume, fortunately, goes beyond the restrictions of the title of operative, and wisely, as well, includes considerations of general surgical and urological conditions as related to gynecology. All may not employ the methods of treatment used by Dr. Te Linde, but the account of the results is instructive, and all may profit by the discussions regarding choice of procedures or therapy, including selection of anesthetics and the useful early chapter entitled "Armamentarium."

The text is in double-column clear print, and the many illustrations are from the well-known Max Brödel School of Medical Illustrators.

Miles J. O. Gullingsrud, M.D.

OPHTHALMOLOGY IN THE WAR YEARS. Volume I (1940-1943). Edited by Meyer Wiener, M.D. 1166 pages. Price $13.50. Chicago: Year Book Publishers Incorporated, 1946.

The editor and authors have successfully attempted to catalogue briefly all of the literature available in experimental as well as clinical ophthalmology for the years 1940 to 1943. The eye was arbitrarily divided into anatomic, pathologic, physiologic, experimental and clinical segments, that is, one chapter is devoted to "Anatomy and Embryology," another to "The Aqueous Humor," another to "Experimental Pathology," another to "Injuries" and so on, each subject being assigned to an authority in that field. There are thirty-two chapters, each related to the other but specifically covering the literature on a single topic. Of necessity, there is a certain amount of overlapping. This tends to coordinate the various chapters and so produce some continuity.

Each author has extensively reviewed all of the available literature in the assigned field, not only in the English journals but in all foreign language journals available to him. For this reason the bibliography on each chapter is extensive.

The men who have reviewed this literature have not simply copied down the conclusion of the various articles, rather they have constructed their chapters more as a running comment, ever bearing in mind the desires of the practical clinical ophthalmologist. It is possible that in covering such a vast quantity of data, certain points have been overlooked which would be of interest to some and of no interest to many. In any event, the basic idea and results have been mentioned, and while more detail is given to subjects where some practical value may be inferred, one can readily judge the nature of any subject mentioned and find it in detail by using the bibliography. This volume reads easily and contains a surprising number of details in spite of the small space limited to comment on each paper reviewed. It is indexed by author and by subject.

This book should be of considerable value to the ophthalmologist returning from the service and to the practitioner who during the war years has been unable to follow the current literature. It serves better than any single edition, to the reviewer's knowledge, to give a good cross section of the research done in the past three years. A second volume, which will include the years from 1943 to 1946, will be available soon.

FRANCIS M. WALSH, M.D.

CLINICAL-PATHOLOGICAL CONFERENCES

Case for Diagnosis

(Continued from Page 1243)

per cent accurate. It may be removed at time of surgery. Pantopaque, a newer iodine preparation of lower viscosity, is absorbed from the subarachnoid space at the rate of 1 c.c. per year. Arbuckle, Shelden, and Pudenz[1] were able to remove more than 90 per cent of the oil in 70 per cent of their cases by aspiration under fluoroscopy.

The results of surgery in the extramedullary group of tumors is excellent. Naturally, early diagnosis before extensive cord damage has occurred is paramount.

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